



# ecology and environment, inc.

Global Environmental Specialists

720 Third Avenue, Suite 1700, Seattle, WA 98104  
Tel: (206) 624-9537, Fax: (206) 621-9832

## MEMORANDUM

DATE: July 31, 2012

TO: Steve Hall, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *MW*

SUBJ: Organic Data Quality Assurance Review, Avery Landing Site, Avery, Idaho

COC: 12-05-0006-23

REF: TDDs: 12-05-0006                      PANs: 002233.0790.01RA  
              12-05-0007                      PANs: 002233.0791.01RA  
              12-05-0008                      PANs: 002233.0792.01RA  
              12-05-0009                      PANs: 002233.0793.01RA

The data quality assurance review of two soil samples collected from the Avery Landing Site (consisting of the Avery Bencik, Avery IDOL, Avery FHWA, and Avery Potlatch sites) located in Avery, Idaho, has been completed. Analysis for Extended Diesel Range Total Petroleum Hydrocarbons (Ecology Method NWTPH-Dx) was performed by TestAmerica Seattle, Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2 and 4 Data Validation Electronic/Manual Process (S4VEM). The samples were numbered:                      12060078                      12060079

### Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained at < 6°C. The samples were collected on July 23, 2012, extracted by July 25, 2012, and analyzed by July 26, 2012, therefore meeting QC criteria of less than 14 days between collection and extraction for soil samples, and less than 40 days between extraction and analysis.

2. **Initial and Continuing Calibrations: Acceptable.**

Calculations were verified as correct. All initial calibration correlation coefficients were  $\geq 0.990$  and/or all relative percent differences (RPDs) were less than or equal to the laboratory control limits of 15%. All continuing calibration percent differences (%Ds) were  $\leq$  the laboratory control limits of 15%.

3. **Error Determination: Not Performed.**

Samples necessary for bias and precision determination were not provided to the laboratory. All samples were flagged RND (Recovery Not Determined) and PND (Precision Not Determined), although the flags are not found on the Form I's.

4. **Blanks: Satisfactory.**

A method blank was analyzed for each extraction batch for each matrix and analysis system. Diesel-range TPHs (7.80 mg/kg) and motor oil-range TPHs (17.1 mg/kg) were detected in the method blank; no action was taken as applicable sample results were more than five times the blank results.

5. **System Monitoring Compounds (SMC): Acceptable.**

All recoveries of the SMCs were greater than 10% and within QC criteria.

6. **Performance Evaluation Samples: Not Provided.**  
Performance evaluation samples were not provided to the laboratory.
7. **Blank Spikes: Acceptable.**  
Blank spike results were within QC limits.
8. **Duplicates: Acceptable.**  
Duplicate results were within QC limits.
9. **Quantitation and Quantitation Limits: Acceptable.**  
Sample concentrations were correctly calculated.
10. **Laboratory Contact: Not Required.**  
No laboratory contact was required.
11. **Overall Assessment of Data for Use**  
In samples 12060078 and 12060079, the results in the #2 Diesel and Motor Oil ranges are due to what most closely resembles a complex mixture of heavily weathered/degraded diesel fuel, a mineral/transformer oil range product, and motor oil. The affected analytes are qualified as estimated quantities with a high bias (JH).

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan, the OSWER Directive "Quality Assurance/Quality Control Guidance for Removal Activities, Data Validation Procedures" (EPA/540/G-90/004), and the analytical method. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

#### Data Qualifiers and Definitions

- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- JH - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a high bias.
- JL - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a low bias.
- JK - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with an unknown direction of bias.
- JQ - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with an unknown direction of bias and falls between the Method Detection Limit (MDL) and the Reporting Limit (RL).
- UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

# Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-34089-1

Client Sample ID: 12060078

Lab Sample ID: 580-34089-1

Date Sampled: 07/23/2012 0830

Client Matrix: Solid

% Moisture: 22.4

Date Received: 07/24/2012 0950

## NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	580-116162	Instrument ID:	SEA012
Prep Method:	3550B	Prep Batch:	580-116125	Lab File ID:	CF00722.D
Dilution:	1.0			Initial Weight/Volume:	10.1228 g
Analysis Date:	07/26/2012 0844			Final Weight/Volume:	10 mL
Prep Date:	07/25/2012 1245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
#2 Diesel (C10-C24)		1700	JH BY	7.3	32
Motor Oil (>C24-C36)		1700	JH B MW	12	64
Surrogate		%Rec	Qualifier	Acceptance Limits	
o-Terphenyl		115		50 - 150	

S4VA  
↓

mw  
7-3112

# Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-34089-1

Client Sample ID: 12060079

Lab Sample ID: 580-34089-2

Date Sampled: 07/23/2012 0845

Client Matrix: Solid

% Moisture: 22.7

Date Received: 07/24/2012 0950

## NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

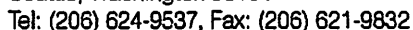
Analysis Method:	NWTPH-Dx	Analysis Batch:	580-116162	Instrument ID:	SEA012
Prep Method:	3550B	Prep Batch:	580-116125	Lab File ID:	CF00724.D
Dilution:	1.0			Initial Weight/Volume:	10.2840 g
Analysis Date:	07/26/2012 0924			Final Weight/Volume:	10 mL
Prep Date:	07/25/2012 1245			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
#2 Diesel (C10-C24)		590	OFF KB	7.2	31
Motor Oil (>C24-C36)		640	JH Y B	11	63
Surrogate		%Rec	Qualifier	Acceptance Limits	
o-Terphenyl		101		50 - 150	

SHM

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73Hz





All average Relative Response Factors (RRFs) were within the QC limits. All Relative Standard Deviations (RSDs) were within the OC limits.

**4. Continuing Calibration: Satisfactory.**

All RRFs were within the QC limits. All % differences were within the QC limits except indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, and benzo(g,h,i) perylene with high recoveries in the 7-25 calibration and hexachlorocyclopentadiene and pentachlorophenol with low recoveries in the 7-26 calibration. Positive sample results associated with the high recovery outliers were qualified as estimated quantities with a high bias (JH). Positive results and sample quantitation limits associated with the low recovery outliers were qualified as estimated quantities with a low bias (JL and UJL, respectively).

**5. Blanks: Acceptable.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

**6. System Monitoring Compounds (SMCs): Acceptable.**

All SMC recoveries were within QC limits.

**7. Matrix Spike (MS)/MS Duplicate (MSD)/Blank Spike (BS) Analysis: Satisfactory.**

All spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits except pentachlorophenol with a low recovery in the BS (associated positive results and sample quantitation limits were qualified as estimated quantities with a low bias [JL and UJL, respectively]).

**8. Duplicate Analysis: Satisfactory.**

Spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All spike duplicate results were within QC limits except pyrene. No action was taken based on this outlier as the associated spike results were within QC limits.

**9. Internal Standards: Acceptable.**

All internal standards (IS) were within  $\pm 30$  seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

**10. Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

**11. Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

**12. Overall Assessment of Data for Use**

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical

method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- JH - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a high bias.
- JL - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a low bias.
- JK - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with an unknown direction of bias.
- JQ - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with an unknown direction of bias and falls between the MDL and the Minimum (or Practical) Quantitation Limit (MQL, PQL).
- N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Company : Ecology and Environment, Inc.  
Address : 720 Third Ave  
Suite 1700  
Seattle, Washington 98104  
Contact: Mr. Steve Hall  
Project: Project No. 4500000347

Report Date: July 27, 2012

Client Sample ID: 12060076  
Sample ID: 308397001  
Matrix: Soil  
Collect Date: 21-JUL-12 09:00  
Receive Date: 24-JUL-12  
Collector: Client  
Moisture: 23.2%

Project: ECOL00801  
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatile-GC/MS										
SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"										
1,1'-Biphenyl	U	ND	433	ug/kg	1	JLD1	07/25/12	1712	1232292	1
1,2,4,5-Tetrachlorobenzene	U	ND	433	ug/kg	1					
1-Methylnaphthalene	U	ND	43.3	ug/kg	1					
2,3,4,6-Tetrachlorophenol	U	ND	433	ug/kg	1					
2,4,5-Trichlorophenol	U	ND	433	ug/kg	1					
2,4,6-Trichlorophenol	U	ND	433	ug/kg	1					
2,4-Dichlorophenol	U	ND	433	ug/kg	1					
2,4-Dimethylphenol	U	ND	433	ug/kg	1					
2,4-Dinitrophenol	U	ND	866	ug/kg	1					
2,4-Dinitrotoluene	U	ND	433	ug/kg	1					
2,6-Dinitrotoluene	U	ND	433	ug/kg	1					
2-Chloronaphthalene	U	ND	43.3	ug/kg	1					
2-Chlorophenol	U	ND	433	ug/kg	1					
2-Methyl-4,6-dinitrophenol	U	ND	433	ug/kg	1					
2-Methylnaphthalene	U	ND	43.3	ug/kg	1					
2-Nitrophenol	U	ND	433	ug/kg	1					
3,3'-Dichlorobenzidine	U	ND	433	ug/kg	1					
4-Bromophenylphenylether	U	ND	433	ug/kg	1					
4-Chloro-3-methylphenol	U	ND	433	ug/kg	1					
4-Chloroaniline	U	ND	433	ug/kg	1					
4-Chlorophenylphenylether	U	ND	433	ug/kg	1					
4-Nitrophenol	U	ND	433	ug/kg	1					
Acenaphthene	U	ND	43.3	ug/kg	1					
Acenaphthylene	U	ND	43.3	ug/kg	1					
Acetophenone	U	ND	433	ug/kg	1					
Anthracene	U	ND	43.3	ug/kg	1					
Atrazine	U	ND	433	ug/kg	1					
Benzaldehyde	U	ND	433	ug/kg	1					
Benzo(a)anthracene	U	402	43.3	ug/kg	1					
Benzo(a)pyrene	U	ND	43.3	ug/kg	1					
Benzo(b)fluoranthene	U	ND	43.3	ug/kg	1					
Benzo(ghi)perylene	U	126	43.3	ug/kg	1					
Benzo(k)fluoranthene	U	ND	43.3	ug/kg	1					
Butylbenzylphthalate	U	ND	433	ug/kg	1					
Caprolactam	U	ND	433	ug/kg	1					
Carbazole	U	ND	43.3	ug/kg	1					
Chrysene	U	629	43.3	ug/kg	1					

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Project: Project No. 4500000347

Report Date: July 27, 2012

Client Sample ID: 12060076  
Sample ID: 308397001

Project: ECOL00801  
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Semi-Volatile-GC/MS</b>										
<i>SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"</i>										
Di-n-butylphthalate	U	ND	433	ug/kg	1					
Di-n-octylphthalate	U	ND	433	ug/kg	1					
Dibenzo(a,h)anthracene	U	ND	43.3	ug/kg	1					
Dibenzofuran	U	ND	433	ug/kg	1					
Diethylphthalate	U	ND	433	ug/kg	1					
Dimethylphthalate	U	ND	433	ug/kg	1					
Diphenylamine	U	ND	433	ug/kg	1					
Fluoranthene	U	ND	43.3	ug/kg	1					
Fluorene	U	ND	43.3	ug/kg	1					
Hexachlorobenzene	U	ND	433	ug/kg	1					
Hexachlorobutadiene	U	ND	433	ug/kg	1					
Hexachlorocyclopentadiene	U	ND	433	ug/kg	1					
Hexachloroethane	U	ND	433	ug/kg	1					
Indeno(1,2,3-cd)pyrene	U	ND	43.3	ug/kg	1					
Isophorone	U	ND	433	ug/kg	1					
N-Nitrosodipropylamine	U	ND	433	ug/kg	1					
Naphthalene	U	ND	43.3	ug/kg	1					
Nitrobenzene	U	ND	433	ug/kg	1					
Pentachlorophenol	U	ND	433	ug/kg	1					
Phenanthrene		2940	43.3	ug/kg	1					
Phenol	U	ND	433	ug/kg	1					
Pyrene		2660	43.3	ug/kg	1					
bis(2-Chloroethoxy)methane	U	ND	433	ug/kg	1					
bis(2-Chloroethyl) ether	U	ND	433	ug/kg	1					
bis(2-Chloroisopropyl)ether	U	ND	433	ug/kg	1					
bis(2-Ethylhexyl)phthalate	U	ND	433	ug/kg	1					
m,p-Cresols	U	ND	433	ug/kg	1					
m-Nitroaniline	U	ND	433	ug/kg	1					
o-Cresol	U	ND	433	ug/kg	1					
o-Nitroaniline	U	ND	433	ug/kg	1					
p-Nitroaniline	U	ND	433	ug/kg	1					

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3550C	3550C BNA Soil Prep for 8270D	MXS4	07/24/12	1915	1232290

### The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3550C/8270D	

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Contact: Mr. Steve Hall  
Project: Project No. 4500000347

Report Date: July 27, 2012

Client Sample ID: 12060076  
Sample ID: 308397001

Project: ECOL00801  
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits					
2-Fluorobiphenyl	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	1010 ug/kg	2160	46.9	(24%-106%)					
Nitrobenzene-d5	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	1120 ug/kg	2160	51.9	(22%-124%)					
p-Terphenyl-d14	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	1880 ug/kg	2160	86.9	(24%-137%)					
2,4,6-Tribromophenol	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	2160 ug/kg	4330	49.8	(23%-124%)					
2-Fluorophenol	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	1890 ug/kg	4330	43.7	(27%-112%)					
Phenol-d5	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	1720 ug/kg	4330	39.8	(26%-112%)					

*MW*  
*86h*

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Address : 720 Third Ave  
Suite 1700  
Seattle, Washington 98104  
Contact: Mr. Steve Hall  
Project: Project No. 4500000347

Report Date: July 27, 2012

Client Sample ID: 12060077  
Sample ID: 308397002  
Matrix: Soil  
Collect Date: 21-JUL-12 09:15  
Receive Date: 24-JUL-12  
Collector: Client  
Moisture: 23.9%

Project: ECOL00801  
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatile-GC/MS										
SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"										
1,1'-Biphenyl	U	ND	438	ug/kg	1	JLD1	07/25/12	1737	1232292	1
1,2,4,5-Tetrachlorobenzene	U	ND	438	ug/kg	1					
1-Methylnaphthalene	U	ND	43.8	ug/kg	1					
2,3,4,6-Tetrachlorophenol	U	ND	438	ug/kg	1					
2,4,5-Trichlorophenol	U	ND	438	ug/kg	1					
2,4,6-Trichlorophenol	U	ND	438	ug/kg	1					
2,4-Dichlorophenol	U	ND	438	ug/kg	1					
2,4-Dimethylphenol	U	ND	438	ug/kg	1					
2,4-Dinitrophenol	U	ND	875	ug/kg	1					
2,4-Dinitrotoluene	U	ND	438	ug/kg	1					
2,6-Dinitrotoluene	U	ND	438	ug/kg	1					
2-Chloronaphthalene	U	ND	43.8	ug/kg	1					
2-Chlorophenol	U	ND	438	ug/kg	1					
2-Methyl-4,6-dinitrophenol	U	ND	438	ug/kg	1					
2-Methylnaphthalene	U	ND	43.8	ug/kg	1					
2-Nitrophenol	U	ND	438	ug/kg	1					
3,3'-Dichlorobenzidine	U	ND	438	ug/kg	1					
4-Bromophenylphenylether	U	ND	438	ug/kg	1					
4-Chloro-3-methylphenol	U	ND	438	ug/kg	1					
4-Chloroaniline	U	ND	438	ug/kg	1					
4-Chlorophenylphenylether	U	ND	438	ug/kg	1					
4-Nitrophenol	U	ND	438	ug/kg	1					
Acenaphthene	U	ND	43.8	ug/kg	1					
Acenaphthylene	U	ND	43.8	ug/kg	1					
Acetophenone	U	ND	438	ug/kg	1					
Anthracene	U	ND	43.8	ug/kg	1					
Atrazine	U	ND	438	ug/kg	1					
Benzaldehyde	U	ND	438	ug/kg	1					
Benzo(a)anthracene	U	251	43.8	ug/kg	1					
Benzo(a)pyrene	U	ND	43.8	ug/kg	1					
Benzo(b)fluoranthene	U	ND	43.8	ug/kg	1					
Benzo(ghi)perylene	U	ND	43.8	ug/kg	1					
Benzo(k)fluoranthene	U	ND	43.8	ug/kg	1					
Butylbenzylphthalate	U	ND	438	ug/kg	1					
Caprolactam	U	ND	438	ug/kg	1					
Carbazole	U	ND	43.8	ug/kg	1					
Chrysene	U	384	43.8	ug/kg	1					

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## Certificate of Analysis

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Contact: Mr. Steve Hall  
Project: Project No. 4500000347

Report Date: July 27, 2012

Client Sample ID: 12060077  
Sample ID: 308397002

Project: ECOL00801  
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Semi-Volatile-GC/MS</b>										
<i>SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"</i>										
Di-n-butylphthalate	U	ND	438	ug/kg	1					
Di-n-octylphthalate	U	ND	438	ug/kg	1					
Dibenzo(a,h)anthracene	U	ND	43.8	ug/kg	1					
Dibenzofuran	U	ND	438	ug/kg	1					
Diethylphthalate	U	ND	438	ug/kg	1					
Dimethylphthalate	U	ND	438	ug/kg	1					
Diphenylamine	U	ND	438	ug/kg	1					
Fluoranthene	U	ND	43.8	ug/kg	1					
Fluorene	U	ND	43.8	ug/kg	1					
Hexachlorobenzene	U	ND	438	ug/kg	1					
Hexachlorobutadiene	U	ND	438	ug/kg	1					
Hexachlorocyclopentadiene	U	ND	438	ug/kg	1					
Hexachloroethane	U	ND	438	ug/kg	1					
Indeno(1,2,3-cd)pyrene	U	ND	43.8	ug/kg	1					
Isophorone	U	ND	438	ug/kg	1					
N-Nitrosodipropylamine	U	ND	438	ug/kg	1					
Naphthalene	U	ND	43.8	ug/kg	1					
Nitrobenzene	U	ND	438	ug/kg	1					
Pentachlorophenol	U	ND	438	ug/kg	1					
Phenanthrene		1880	43.8	ug/kg	1					
Phenol	U	ND	438	ug/kg	1					
Pyrene		1110	43.8	ug/kg	1					
bis(2-Chloroethoxy)methane	U	ND	438	ug/kg	1					
bis(2-Chloroethyl) ether	U	ND	438	ug/kg	1					
bis(2-Chloroisopropyl) ether	U	ND	438	ug/kg	1					
bis(2-Ethylhexyl)phthalate	U	ND	438	ug/kg	1					
m,p-Cresols	U	ND	438	ug/kg	1					
m-Nitroaniline	U	ND	438	ug/kg	1					
o-Cresol	U	ND	438	ug/kg	1					
o-Nitroaniline	U	ND	438	ug/kg	1					
p-Nitroaniline	U	ND	438	ug/kg	1					

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3550C	3550C BNA Soil Prep for 8270D	MXS4	07/24/12	1915	1232290

### The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3550C/8270D	



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## Certificate of Analysis

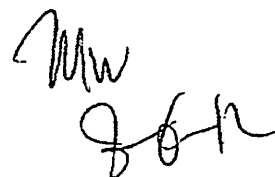
Company : Ecology and Environment, Inc.  
Address : 720 Third Ave  
Suite 1700  
Seattle, Washington 98104  
Contact: Mr. Steve Hall  
Project: Project No. 4500000347

Report Date: July 27, 2012

Client Sample ID: 12060077  
Sample ID: 308397002

Project: ECOL00801  
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits					
2-Fluorobiphenyl	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	916 ug/kg	2190	41.9	(24%-106%)					
Nitrobenzene-d5	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	950 ug/kg	2190	43.4	(22%-124%)					
p-Terphenyl-d14	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	1360 ug/kg	2190	62.2	(24%-137%)					
2,4,6-Tribromophenol	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	1790 ug/kg	4380	40.9	(23%-124%)					
2-Fluorophenol	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	1490 ug/kg	4380	34.1	(27%-112%)					
Phenol-d5	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	1380 ug/kg	4380	31.6	(26%-112%)					





# ecology and environment, inc.

Global Environmental Specialists

720 Third Avenue, Suite 1700

Seattle, Washington 98104

Tel: (206) 624-9537, Fax: (206) 621-9832

## MEMORANDUM

DATE: August 6, 2012

TO: Steve Hall, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington Mw

SUBJ: Organic Data Quality Assurance Review, Avery Landing Site, Avery, Idaho

COC: 12-05-0006-22

REF: TDDs: 12-05-0006 PANs: 002233.0790.01RA  
12-05-0007 PANs: 002233.0791.01RA  
12-05-0008 PANs: 002233.0792.01RA  
12-05-0009 PANs: 002233.0793.01RA

The data quality assurance review of two soil samples collected from the Avery Landing Site (consisting of the Avery Bentsik, Avery IDOL, Avery FHWA, and Avery Potlatch sites) located in Avery, Idaho, has been completed. Volatile organic compound (VOC) analysis (EPA Method 8260) was performed by GEL Labs, Inc., Charleston, South Carolina. All sample analyses were evaluated following EPA's Stage 2 Data Validation Manual Process (S2VM) and/or Stage 4 Data Validation Manual Process (S4VM).

The samples were numbered: 12060078 12060079

### Data Qualifications:

#### 1. Sample Holding Times: Acceptable.

The samples were maintained and received within the QC limits of  $< 6^{\circ}\text{C}$ . The samples were collected on July 23, 2012, and were analyzed by July 26, 2012, therefore meeting QC criteria of less than 14 days between collection and analysis for soil and preserved water samples.

#### 2. Tuning: Acceptable.

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

#### 3. Initial Calibration: Acceptable.

All average Relative Response Factors (RRFs) were within the QC limits. All Relative Standard Deviations (RSDs) were within QC limits.

**4. Continuing Calibration: Satisfactory.**

All RRFs were within the QC limits. All % differences were within the QC limits except carbon tetrachloride with an increasing response factor in the 7-25 continuing calibration; no action was taken based on this outlier as it was not detected in any sample.

**5. Blanks: Acceptable.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

**6. System Monitoring Compounds (SMCs): Satisfactory.**

All SMC recoveries were within QC limits except bromofluorobenzene in sample 12060078 with a high recovery; no action was taken as there were no associated positive results in sample 12060078.

**7. Blank Spike (BS)/BS Duplicate (BSD) Analysis: Acceptable.**

BS and BSD analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits.

**8. Duplicate Analysis: Acceptable.**

Laboratory spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All duplicate results were within QC limits.

**9. Internal Standards: Satisfactory.**

All internal standards were within  $\pm 30$  seconds of the continuing calibration internal standard retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts except chlorobenzene in sample 12060078 and chlorobenzene and 1,4-dichlorobenzene in sample 12060079, all with low area counts; associated sample results were qualified as estimated quantities with a low bias (JL or UJL).

**10. Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

**11. Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

**12. Overall Assessment of Data for Use**

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

### Data Qualifiers and Definitions

- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- JH - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a high bias.
- JL - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a low bias.
- JK - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with an unknown direction of bias.
- JQ - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with an unknown direction of bias and falls between the MDL and the Minimum (or Practical) Quantitation Limit (MQL, PQL).
- N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

# GEL LABORATORIES LLC

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## Certificate of Analysis

Company : Ecology and Environment, Inc.  
Address : 720 Third Ave  
Suite 1700  
Seattle, Washington 98104  
Contact: Mr. Steve Hall  
Project: Project No. 4500000347

Report Date: July 27, 2012

Client Sample ID: 12060078  
Sample ID: 308397003  
Matrix: Soil  
Collect Date: 23-JUL-12 08:30  
Receive Date: 24-JUL-12  
Collector: Client

Project: ECOL00801  
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Volatile Organics</b>										
<i>5035/8260B TCL in Solid "As Received"</i>										
1,1,1-Trichloroethane	U	ND	0.847	ug/kg	1	JEB	07/25/12	2247	1232783	1
1,1,2,2-Tetrachloroethane	U	ND	0.847	ug/kg	1					
1,1,2-Trichloroethane	U	ND	0.847	ug/kg	1					
1,1-Dichloroethane	U	ND	0.847	ug/kg	1					
1,1-Dichloroethylene	U	ND	0.847	ug/kg	1					
1,2-Dichloroethane	U	ND	0.847	ug/kg	1					
1,2-Dichloroethylene (total)	U	ND	1.69	ug/kg	1					
1,2-Dichloropropane	U	ND	0.847	ug/kg	1					
2-Butanone	U	ND	4.24	ug/kg	1					
2-Hexanone	U	ND	4.24	ug/kg	1					
4-Methyl-2-pentanone	U	ND	4.24	ug/kg	1					
Acetone		15.7	4.24	ug/kg	1					
Benzene	U	ND	0.847	ug/kg	1					
Bromodichloromethane	U	ND	0.847	ug/kg	1					
Bromoform	U	ND	0.847	ug/kg	1					
Bromomethane	U	ND	0.847	ug/kg	1					
Carbon disulfide	U	ND	4.24	ug/kg	1					
Carbon tetrachloride	U	ND	0.847	ug/kg	1					
Chlorobenzene	U	ND	0.847	ug/kg	1					
Chloroethane	U	ND	0.847	ug/kg	1					
Chloroform	U	ND	0.847	ug/kg	1					
Chloromethane	U	ND	0.847	ug/kg	1					
Dibromochloromethane	U	ND	0.847	ug/kg	1					
Ethylbenzene	U	ND	0.847	ug/kg	1					
Methylene chloride	U	ND	4.24	ug/kg	1					
Styrene	U	ND	0.847	ug/kg	1					
Tetrachloroethylene	U	ND	0.847	ug/kg	1					
Toluene	U	ND	0.847	ug/kg	1					
Trichloroethylene	U	ND	0.847	ug/kg	1					
Vinyl acetate	U	ND	4.24	ug/kg	1					
Vinyl chloride	U	ND	0.847	ug/kg	1					
Xylenes (total)	U	ND	2.54	ug/kg	1					
cis-1,2-Dichloroethylene	U	ND	0.847	ug/kg	1					
cis-1,3-Dichloropropylene	U	ND	0.847	ug/kg	1					
m,p-Xylenes	U	ND	1.69	ug/kg	1					
o-Xylene	U	ND	0.847	ug/kg	1					
tert-Butyl methyl ether	U	ND	0.847	ug/kg	1					
trans-1,2-Dichloroethylene	U	ND	0.847	ug/kg	1					

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**Certificate of Analysis**

Company : Ecology and Environment, Inc.  
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Contact: Mr. Steve Hall  
Project: Project No. 4500000347

Report Date: July 27, 2012

Client Sample ID: 12060078  
Sample ID: 308397003

Project: ECOL00801  
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
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**Volatile Organics**

5035/8260B TCL in Solid "As Received"

trans-1,3-Dichloropropylene

UJ ~~ND~~ *mu*0.847 *UJ* ug/kg

1

*S41A***The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 5035	5035/8260B Prep	JEB	07/24/12	1425	1232782

**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	5035/8260B TCL in Solid "As Received"	46.7 ug/kg	50.0	110	(80%-124%)
Bromofluorobenzene	5035/8260B TCL in Solid "As Received"	90.7 ug/kg	50.0	214*	(80%-120%)
Toluene-d8	5035/8260B TCL in Solid "As Received"	50.8 ug/kg	50.0	120	(80%-120%)

**The Following NCRs have been identified**

NCR ID:1104042 Batch ID: 1232783 1. Samples 308397003 and 308397004 did not pass surrogate recoveries.

2. Samples 308397003 and 308397004 did not have acceptable internal standard responses.

*MW 8-6-12*

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## Certificate of Analysis

Company : Ecology and Environment, Inc.  
Address : 720 Third Ave  
Suite 1700  
Seattle, Washington 98104  
Contact: Mr. Steve Hall  
Project: Project No. 4500000347

Report Date: July 27, 2012

Client Sample ID: 12060079  
Sample ID: 308397004  
Matrix: Soil  
Collect Date: 23-JUL-12 08:45  
Receive Date: 24-JUL-12  
Collector: Client

Project: ECOL00801  
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Volatile Organics</b>										
<i>5035/8260B TCL in Solid "As Received"</i>										
1,1,1-Trichloroethane	U	ND	0.893	ug/kg	1	JEB	07/26/12	2233	1232783	1
1,1,2,2-Tetrachloroethane	U	ND	0.893	ug/kg	1					
1,1,2-Trichloroethane	U	ND	0.893	ug/kg	1					
1,1-Dichloroethane	U	ND	0.893	ug/kg	1					
1,1-Dichloroethylene	U	ND	0.893	ug/kg	1					
1,2-Dichloroethane	U	ND	0.893	ug/kg	1					
1,2-Dichloroethylene (total)	U	ND	1.79	ug/kg	1					
1,2-Dichloropropane	U	ND	0.893	ug/kg	1					
2-Butanone	U	ND	4.46	ug/kg	1					
2-Hexanone	U	ND	4.46	ug/kg	1					
4-Methyl-2-pentanone	U	ND	4.46	ug/kg	1					
Acetone		10.7	4.46	ug/kg	1					
Benzene	U	ND	0.893	ug/kg	1					
Bromodichloromethane	U	ND	0.893	ug/kg	1					
Bromoform	U	ND	0.893	ug/kg	1					
Bromomethane	U	ND	0.893	ug/kg	1					
Carbon disulfide	U	ND	4.46	ug/kg	1					
Carbon tetrachloride	U	ND	0.893	ug/kg	1					
Chlorobenzene	U	ND	0.893	ug/kg	1					
Chloroethane	U	ND	0.893	ug/kg	1					
Chloroform	U	ND	0.893	ug/kg	1					
Chloromethane	U	ND	0.893	ug/kg	1					
Dibromochloromethane	U	ND	0.893	ug/kg	1					
Ethylbenzene	U	ND	0.893	ug/kg	1					
Methylene chloride	U	ND	4.46	ug/kg	1					
Styrene	U	ND	0.893	ug/kg	1					
Tetrachloroethylene	U	ND	0.893	ug/kg	1					
Toluene	U	ND	0.893	ug/kg	1					
Trichloroethylene	U	ND	0.893	ug/kg	1					
Vinyl acetate	U	ND	4.46	ug/kg	1					
Vinyl chloride	U	ND	0.893	ug/kg	1					
Xylenes (total)	U	ND	2.68	ug/kg	1					
cis-1,2-Dichloroethylene	U	ND	0.893	ug/kg	1					
cis-1,3-Dichloropropylene	U	ND	0.893	ug/kg	1					
m,p-Xylenes	U	ND	1.79	ug/kg	1					
o-Xylene	U	ND	0.893	ug/kg	1					
tert-Butyl methyl ether	U	ND	0.893	ug/kg	1					
trans-1,2-Dichloroethylene	U	ND	0.893	ug/kg	1					

mu 8612

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## Certificate of Analysis

Company : Ecology and Environment, Inc.  
Address : 720 Third Ave  
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Seattle, Washington 98104  
Contact: Mr. Steve Hall  
Project: Project No. 4500000347

Report Date: July 27, 2012

Client Sample ID: 12060079  
Sample ID: 308397004

Project: ECOL00801  
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
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### Volatile Organics

5035/8260B TCL in Solid "As Received"

trans-1,3-Dichloropropylene

U ~~ND~~ *mm*

0.893 U ug/kg

1

*54/11*

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 5035	5035/8260B Prep	JEB	07/24/12	1431	1232782

### The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260B	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	5035/8260B TCL in Solid "As Received"	43.3 ug/kg	50.0	97.0	(80%-124%)
Bromofluorobenzene	5035/8260B TCL in Solid "As Received"	53.7 ug/kg	50.0	120	(80%-120%)
Toluene-d8	5035/8260B TCL in Solid "As Received"	48.9 ug/kg	50.0	110	(80%-120%)

### The Following NCRs have been identified

NCR ID:1104042 Batch ID: 1232783 1. Samples 308397003 and 308397004 did not pass surrogate recoveries.

2. Samples 308397003 and 308397004 did not have acceptable internal standard responses.

*MW*  
*8-6-12*





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Global Environmental Specialists

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## MEMORANDUM

DATE: August 6, 2012

TO: Steve Hall, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Organic Data Quality Assurance Review, Avery Landing Site, Avery, Idaho**

COC: 12-05-0006-22

REF: TDDs: 12-05-0006                      PANs: 002233.0790.01RA  
                    12-05-0007                      PANs: 002233.0791.01RA  
                    12-05-0008                      PANs: 002233.0792.01RA  
                    12-05-0009                      PANs: 002233.0793.01RA

The data quality assurance review of 2 soil samples collected from the Avery Landing Site (consisting of the Avery Bentcik, Avery IDOL, Avery FHWA, and Avery Potlatch sites) located in Avery, Idaho, has been completed. Polychlorinated Biphenyl (PCB) analysis (EPA Method 8082A) was performed by GEL Labs, Inc., Charleston, South Carolina. All sample analyses were evaluated following EPA's Stage 2 Data Validation Manual Process (S2VM) and/or Stage 4 Data Validation Manual Process (S4VM).

The samples were numbered:    12060076            12060077

### Data Qualifications:

**1. Sample Holding Times: Acceptable.**

The samples were maintained at < 6°C. The samples were collected on July 21, 2012, extracted on July 24, 2012, and were analyzed by July 26, 2012, therefore meeting QC criteria of less than 7 days between collection and water sample extraction (14 days for soils) and less than 40 days between extraction and analysis.

**2. Instrument Performance: Acceptable.**

The surrogate retention time percent difference between the initial calibration standards and the remaining standards and samples was  $\leq 0.3\%$  for capillary column analyses.

**3. Initial and Continuing Calibration: Acceptable.**

All initial calibration relative standard deviations (RSDs) were within QC limits. All continuing calibration % differences (% D) were within QC limits.

**4. Error Determination: Not Provided.**

Samples necessary for bias and precision determination were not provided to the laboratory. All samples were flagged RND (Recovery Not Determined) and PND (Precision Not Determined), although the flags are not found on the Form I's.

**5. Blanks: Acceptable.**

A method blank was prepared at the required frequency of every time samples were extracted for each matrix and for each concentration level, or every 20 samples, whichever is greater, and for each analytical system. No target analytes were detected in any blanks.

**6. Performance Evaluation Samples: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

**7. System Monitoring Compounds (SMCs): Acceptable.**

All recoveries of the SMCs were within the established control limits.

**8. Blank Spike: Acceptable.**

Recoveries of all spiked analytes were within the appropriate control limits except when outside limits due to dilution and matrix interference.

**9. Duplicates: Acceptable.**

Relative Percent Differences (RPDs) of all spiked analytes were within the required control limits.

**10. Compound Identification: Acceptable.**

All results were dual-column confirmed with differences between the columns less than 25%.

**11. Target Compound Quantitation and Quantitation Limits: Acceptable.**

Sample results and quantitation limits were correctly calculated.

**12. Laboratory Contact**

No laboratory contact was required.

**13. Overall Assessment**

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

#### Data Qualifiers and Definitions

- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- JH - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a high bias.
- JL - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a low bias.
- JK - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with an unknown direction of bias.
- JQ - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with an unknown direction of bias and falls between the MDL and the Minimum (or Practical) Quantitation Limit (MQL, PQL).
- N - The analysis indicates the present of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

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## Certificate of Analysis

Company: Ecology and Environment, Inc.

Address: 720 Third Ave

Suite 1700

Seattle, Washington 98104

Contact: Mr. Steve Hall

Project: Project No. 4500000347

Report Date: July 27, 2012

Client Sample ID: 12060076  
Sample ID: 308397001  
Matrix: Soil  
Collect Date: 21-JUL-12 09:00  
Receive Date: 24-JUL-12  
Collector: Client  
Moisture: 23.2%

Project: ECOL00801  
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Semi-Volatiles-PCB</b>										
<i>SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"</i>										
Aroclor-1016	U	ND	21.6	ug/kg	5	JXM	07/26/12	1007	1232183	1
Aroclor-1221	U	ND	21.6	ug/kg	5					
Aroclor-1232	U	ND	21.6	ug/kg	5					
Aroclor-1242	U	ND	21.6	ug/kg	5					
Aroclor-1248	U	ND	21.6	ug/kg	5					
Aroclor-1254	U	ND	21.6	ug/kg	5					
Aroclor-1260	U	ND	21.6	ug/kg	5					
Aroclor-Total	U	ND	21.6	ug/kg	5					

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	AXV1	07/24/12	1814	1232182

### The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3541/8082A	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	5.01 ug/kg	8.65	57.9	(25%-112%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	5.73 ug/kg	8.65	66.2	(19%-130%)

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## Certificate of Analysis

Company : Ecology and Environment, Inc.  
Address : 720 Third Ave  
Suite 1700  
Seattle, Washington 98104  
Contact: Mr. Steve Hall  
Project: Project No. 4500000347

Report Date: July 27, 2012

Client Sample ID: 12060077  
Sample ID: 308397002  
Matrix: Soil  
Collect Date: 21-JUL-12 09:15  
Receive Date: 24-JUL-12  
Collector: Client  
Moisture: 23.9%

Project: ECOL00801  
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Semi-Volatiles-PCB</b>										
<i>SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"</i>										
Aroclor-1016	U	ND	21.8	ug/kg	5	JXM	07/26/12	1022	1232183	1
Aroclor-1221	U	ND	21.8	ug/kg	5					
Aroclor-1232	U	ND	21.8	ug/kg	5					
Aroclor-1242	U	ND	21.8	ug/kg	5					
Aroclor-1248	U	ND	21.8	ug/kg	5					
Aroclor-1254	U	ND	21.8	ug/kg	5					
Aroclor-1260	U	ND	21.8	ug/kg	5					
Aroclor-Total	U	ND	21.8	ug/kg	5					

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	AXV1	07/24/12	1814	1232182

### The following Analytical Methods were performed

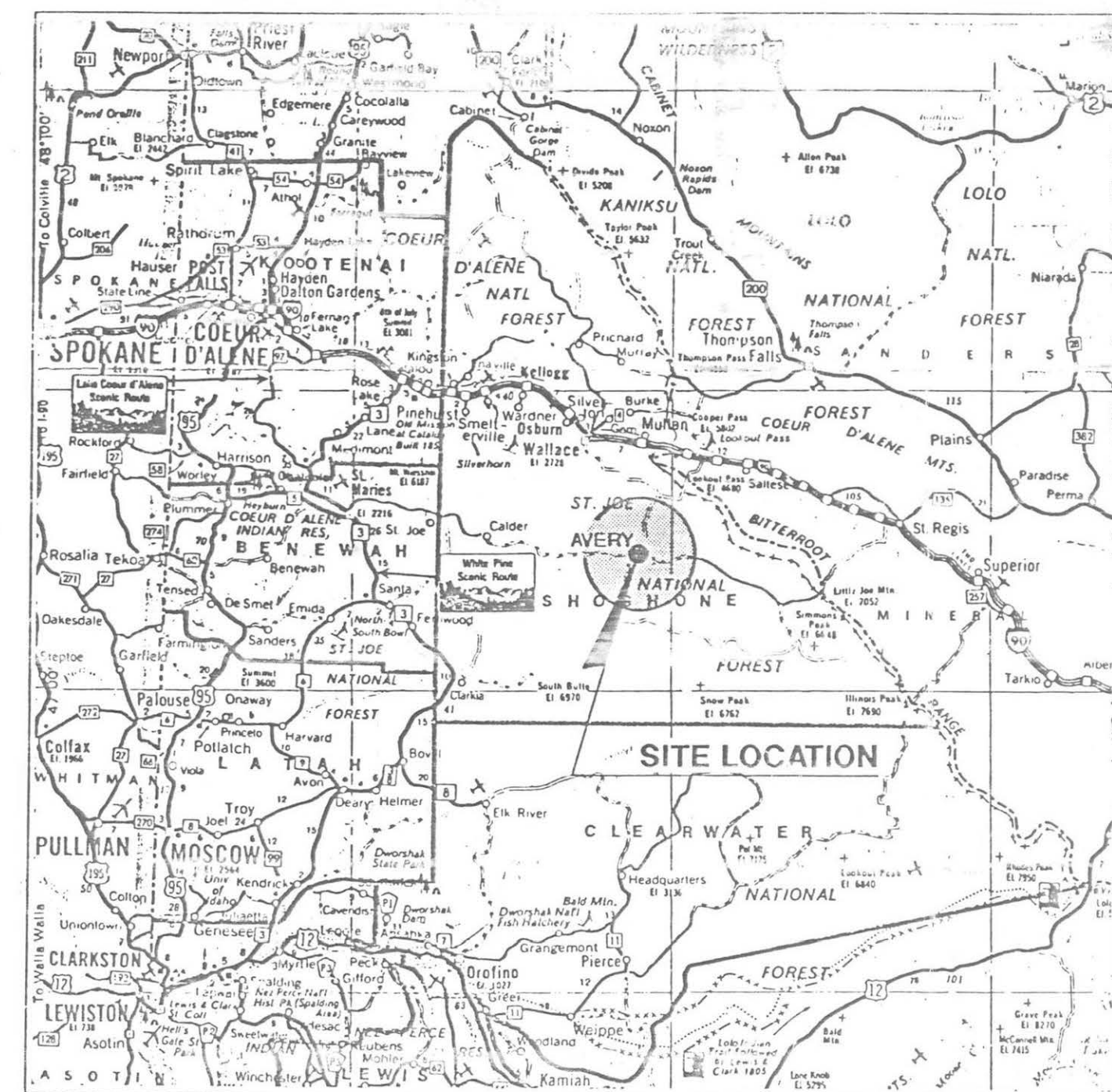
Method	Description	Analyst Comments
I	SW846 3541/8082A	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.53 ug/kg	8.74	51.9	(25%-112%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.97 ug/kg	8.74	56.9	(19%-130%)

# FREE PRODUCT RECOVERY SYSTEM

AVERY, IDAHO

POTLATCH CORPORATION



VICINITY MAP

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1. SHEET 1 OF 3 TITLE SHEET
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3. SHEET 3 OF 3 CROSS SECTION/DETAILS



**HARTCROWSER**

Hart Crowser, Inc.  
1910 Fairview Avenue East  
Seattle, Washington 98102-3699  
206.324.9530

FREE PRODUCT RECOVERY SYSTEM

**TITLE SHEET**

POTLATCH CORPORATION

TYPE DRAWING  
FINAL  
CONST.  
RECORD X  
DATE:  
12/16/94  
JOB NO.  
2296-05

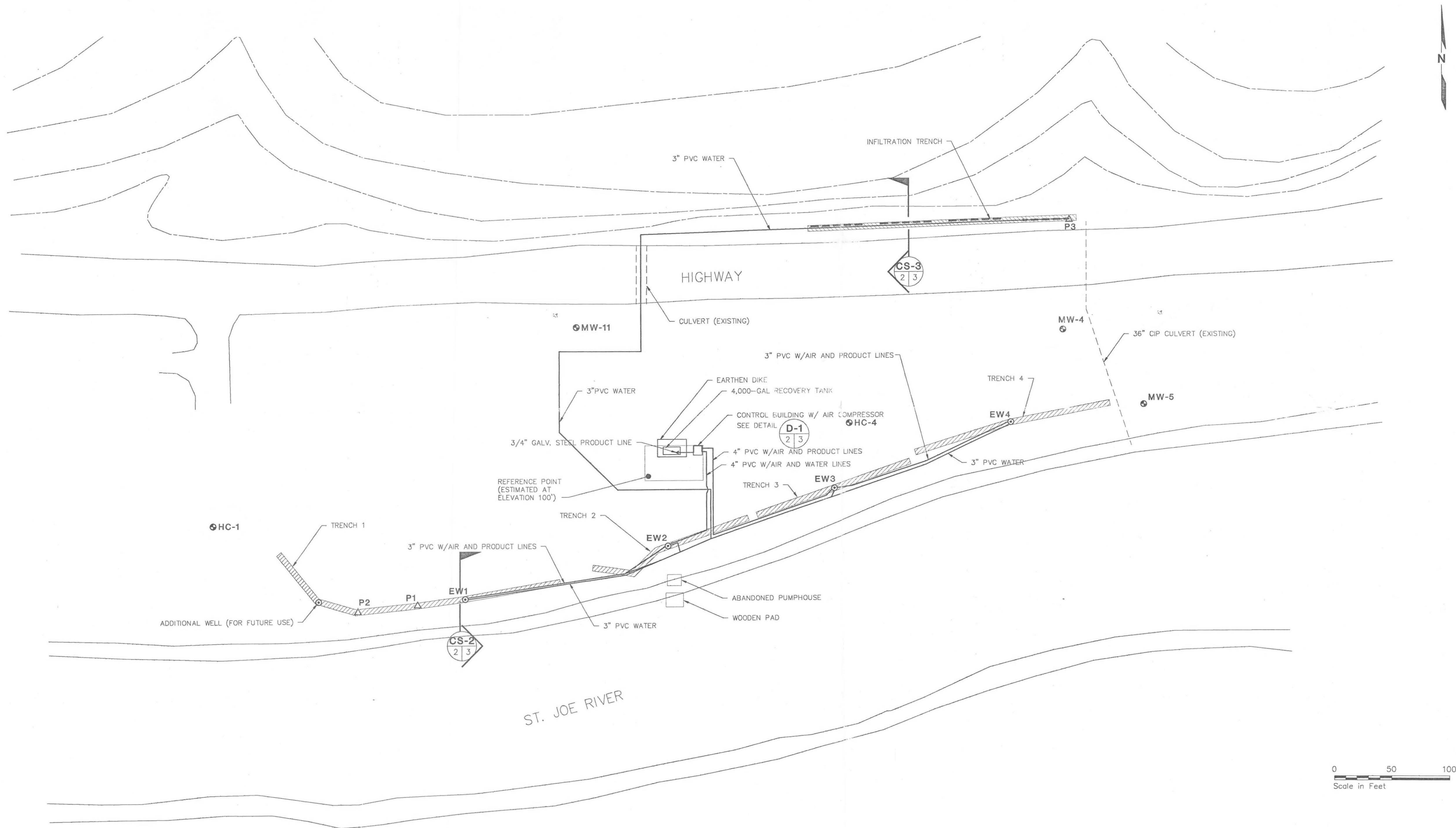
SHEET  
1  
OF  
3  
SHEETS

BENCHMARK:

DESIGNED BY: J.A. HEST  
DRAWN BY: JUAN A. HERNANDEZ  
CHECKED BY: D.G. WINTER  
CHECKED BY: B.L. KELLEMS

NO. DATE BY REVISION





- MW-4 MONITORING WELL LOCATION AND DESIGNATION
- EW1 EXTRACTION WELL LOCATION AND DESIGNATION
- △ P1 PIEZOMETER LOCATION AND DESIGNATION
- 3" PVC 20-SLOT WELL SCREEN
- ▨ INFILTRATION TRENCH
- ▨ EXTRACTION TRENCH

BENCHMARK:				
DESIGNED BY:	J.A. HEST	CHECKED BY:	D.G. WINTER	
DRAWN BY:	S.W. PARK	CHECKED BY:	B.L. KELLEMS	
NO. DATE	BY	REVISION		

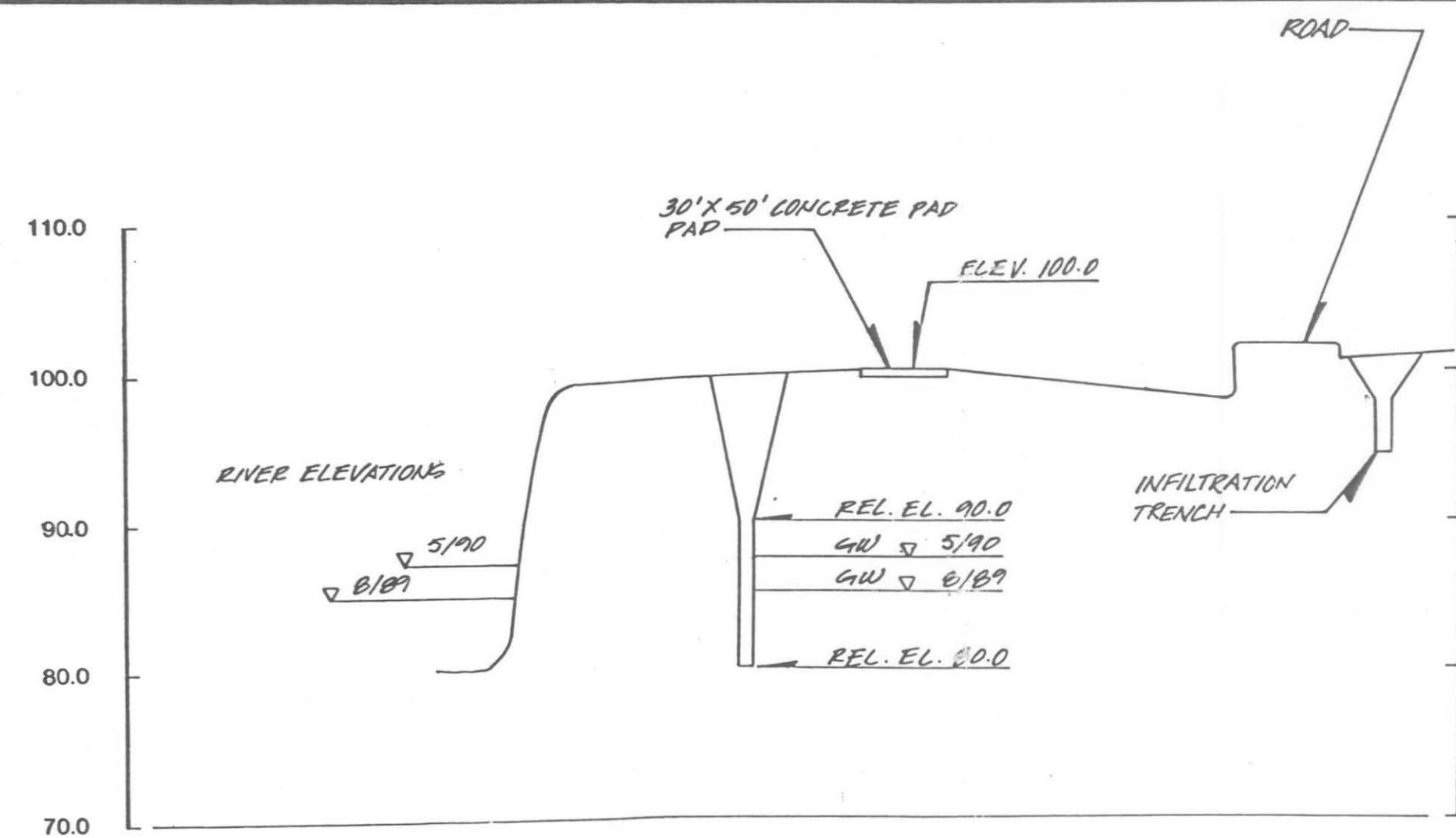
**HARTCROWSER**

Hart Crowser, Inc.  
1910 Fourth Avenue  
Seattle, Washington 98102-3699  
206-324-9530

# FREE PRODUCT RECOVERY SYSTEM SITE PLAN

POTLATCH CORPORATION

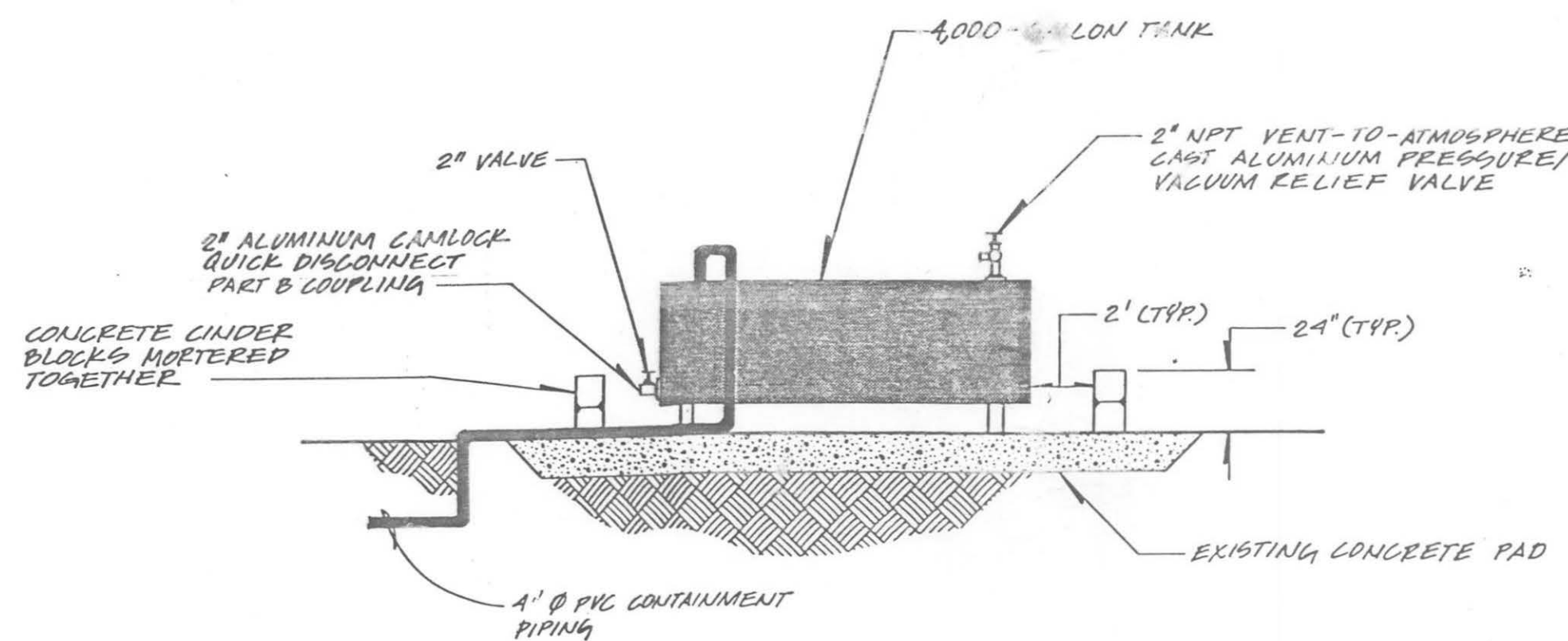
TYPE DRAWING	SHEET
PRELIM.	
CONST.	
RECORD	X
DATE:	12/19/94
JOB NO.	2296-05
SHEETS	2 OF 3



**NOTES:**

1. REFERENCE POINT FOR RELATIVE ELEVATIONS IS 30' X 50' CONCRETE PAD.
2. THE INSTALLER IS RESPONSIBLE FOR TEMPORARY SHIELDING AND DEWATERING NECESSARY FOR TRENCH INSTALLATION.
3. EXCAVATED SOIL AND GROUNDWATER MAY CONTAIN PETROLEUM HYDROCARBONS. INSTALLER IS RESPONSIBLE FOR WORKER HEALTH AND SAFETY, AND PROPER SOIL DISPOSAL.

**SECTION CS-1**  
NOT TO SCALE  
2 3

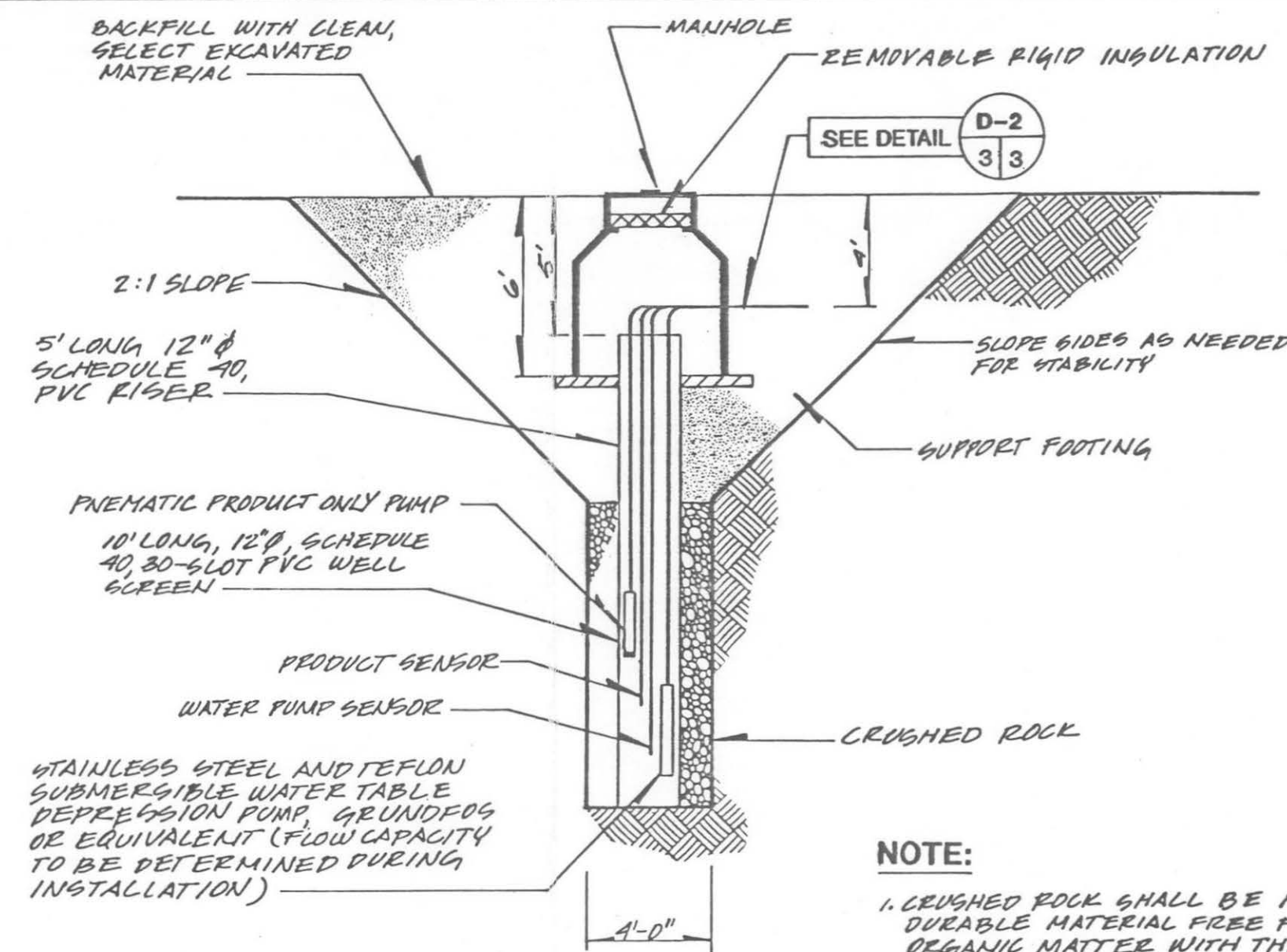


**NOTE:**

1. ~~CONSTRUCT CONTAINMENT ON ALL SIDES OF TANK~~  
(LONG SIDES OF CONTAINMENT NOT SHOWN IN DRAWING.)

ACTUAL CONTAINMENT CONSTRUCTED USING EARTHEN BERMS

**TANK AND CONTAINMENT DETAIL D-1**  
NOT TO SCALE  
2 3

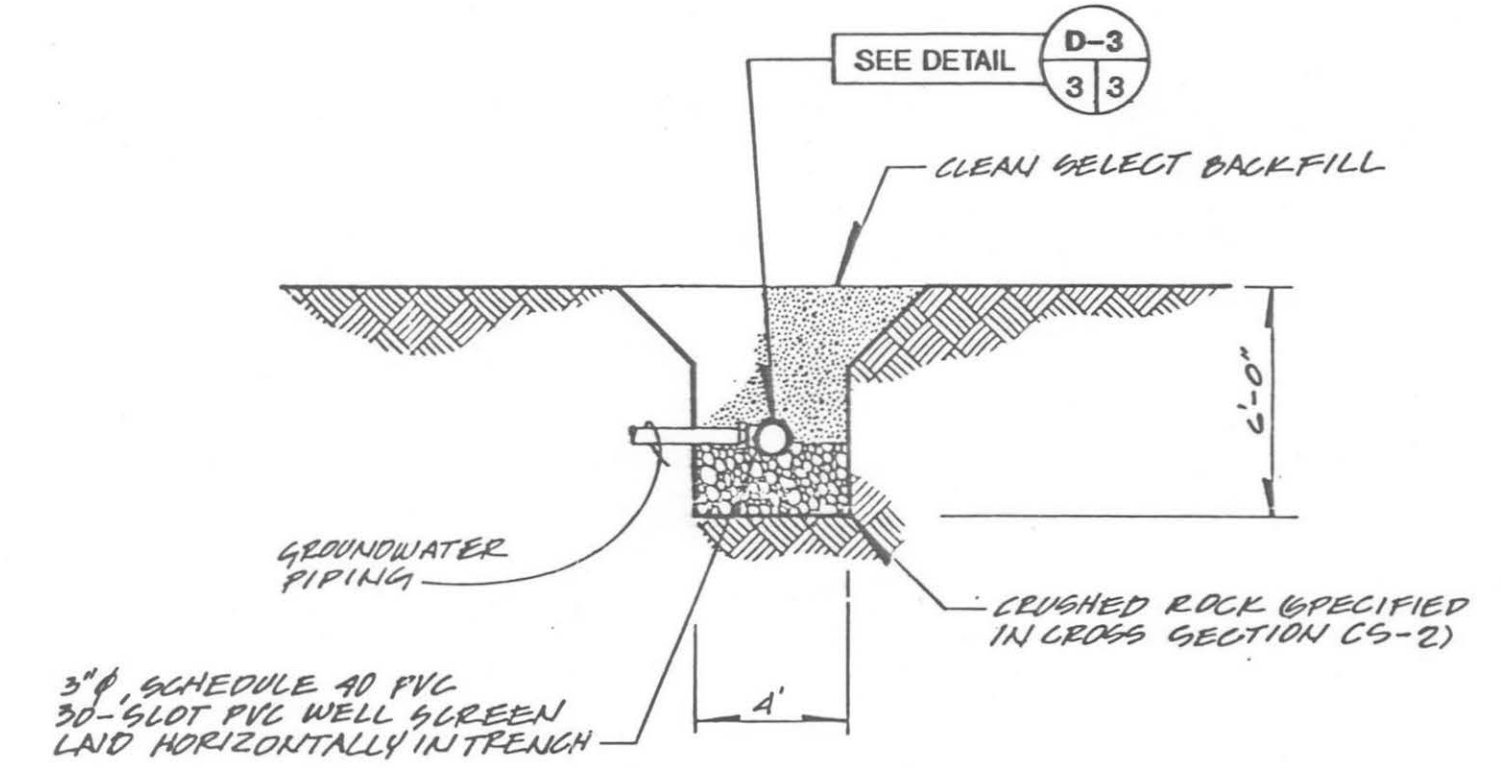


**NOTE:**

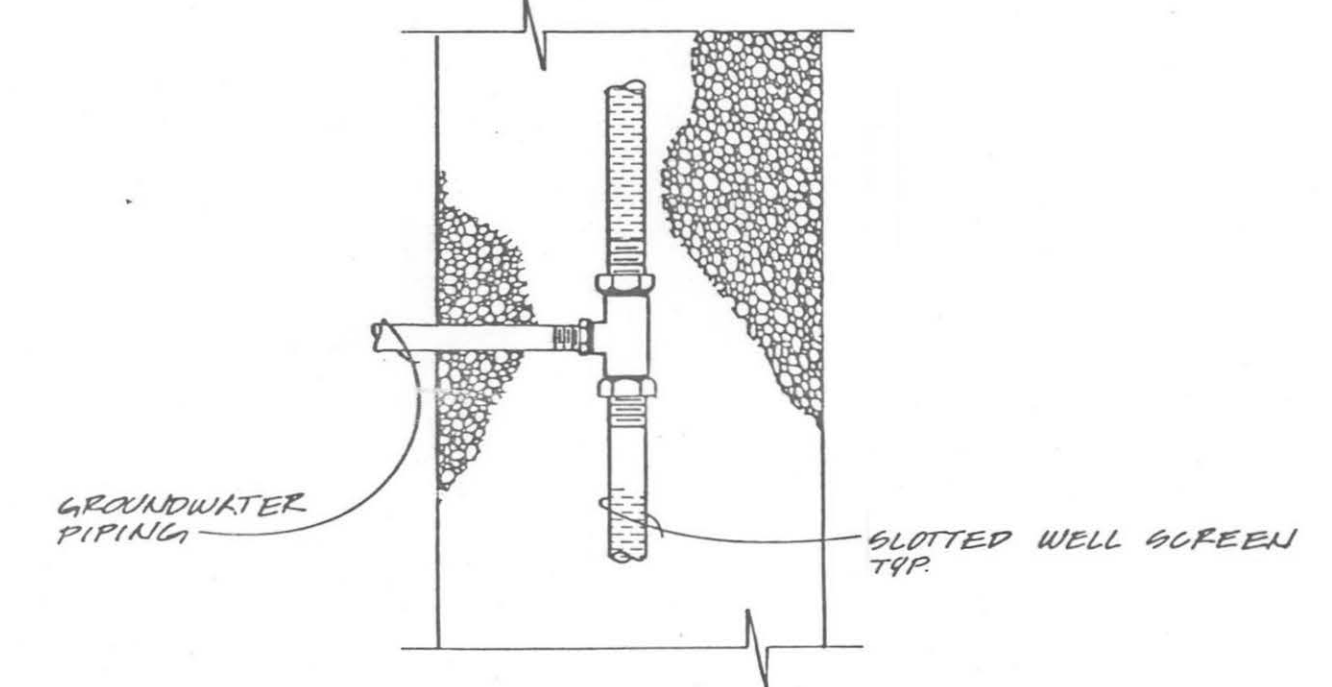
1. CRUSHED ROCK SHALL BE HARD, DURABLE MATERIAL FREE FROM ORGANIC MATTER WITH THE FOLLOWING GRADATION:

US SIEVE SIZE	% FINER
3 INCH	100
1/4 INCH	0-2

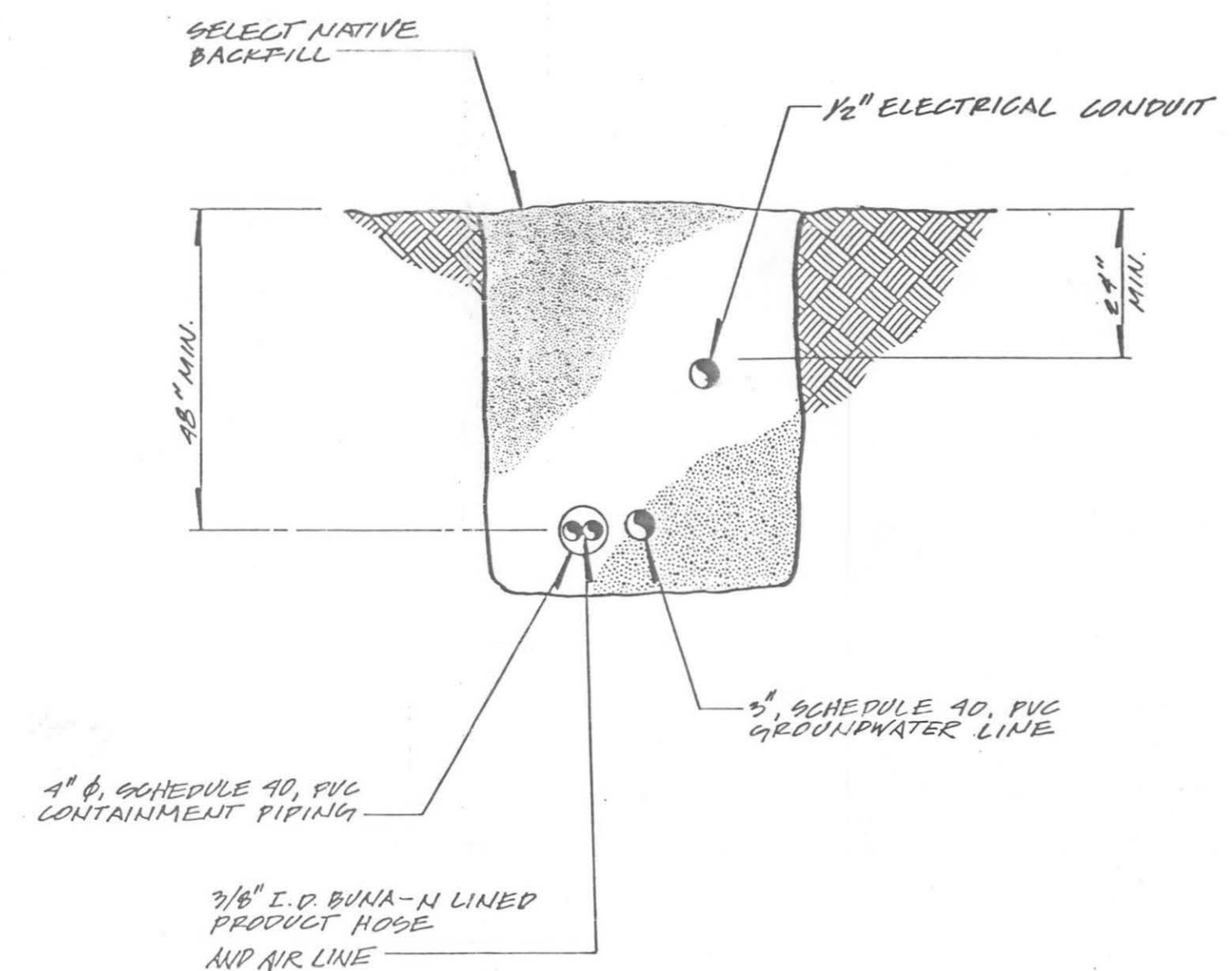
**SECTION CS-2**  
NOT TO SCALE  
2 3



**SECTION CS-3**  
NOT TO SCALE  
2 3



**SECTION CONNECTION DETAIL D-3**  
NOT TO SCALE  
3 3



**TRENCH DETAIL D-2**  
NOT TO SCALE  
3 3



**HARTCROWSER**

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Seattle, Washington 98102-3699  
206.324.9530

FREE PRODUCT RECOVERY SYSTEM

**CROSS SECTION/DETAILS**

POTLATCH CORPORATION

TYPE DRAWING  
FINAL  
CONST.  
RECORD X  
DATE:  
12/16/94  
JOB NO.  
2296-05

SHEET  
3  
OF  
3  
SHEETS

BENCHMARK:

DESIGNED BY: J.A. HEST  
CHECKED BY: D.G. WINTER  
DRAWN BY: JUAN A. HERNANDEZ  
CHECKED BY: B.L. KELLENS

NO. DATE BY REVISION





# HARTCROWSER

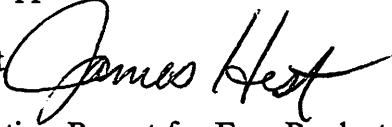
Earth and Environmental Technologies

Hart Crowser, Inc.  
1910 Fairview Avenue East  
Seattle, Washington 98102-3699  
Fax 206.328.5581  
Tel 206.324.9530

## MEMORANDUM

**DATE:** December 23, 1994

**TO:** Gregg Rapp/Potlatch

**FROM:** Jim Hest 

**RE:** Construction Report for Free Product Recovery System (FPRS)  
Avery Landing, Idaho  
J-2296-05

Construction activities for installation of the FPRS at the Avery Landing site are summarized in Table 1. The on-site personnel during construction were:

Mike Orr and Steve Normington (and others during peak construction)	Latah Construction
Jim Hest and Jim Feider	Hart Crowser
Mark Harpole	Current Electric

The equipment used to construct the recovery trenches and utility trenches was supplied by Latah Construction and consisted of the following:

- ▶ Trackhoe - Komatsu PC300LC
- ▶ Dozer - Catapillar D-8
- ▶ Backhoe - Case 580
- ▶ Dump Truck - 10 CY International

Table 2 summarizes the groundwater and product levels in the existing monitoring wells that were measured prior to actual construction of the deep trenches. It should be noted that monitoring well HC-2 had been destroyed prior to FPRS work and could not be





Potlatch  
December 23, 1994

J-2296-05  
Page 2

located. Table 3 summarizes the groundwater and product levels in the existing monitoring wells and new extraction wells measured prior to FPRS startup. Table 4 summarizes the groundwater and product levels in the new extraction wells during FPRS startup.

Several major changes were made during the construction of the FPRS. The original design was to construct three extraction trenches totaling 450 linear feet and 150 linear feet of infiltration trench. During excavation, the extent of contamination was found to exceed the boundaries estimated for the original design. Potlatch Corporation, with the consent of Idaho Department of Environmental Quality (IDEQ), added an additional extraction trench. Four extraction trenches totaling 730 linear feet were constructed, and a modified extraction well was installed near the west end of Trench No. 1 for possible future use. Additionally, a total of 220 linear feet of infiltration trench was constructed to account for the installation of the fourth extraction trench.

Several problems were encountered during FPRS startup involving the sensors associated with two of the skimming pumps and a broken regulator, which were not operational at startup. Mark Harpole continued to troubleshoot the problems and eventually got all the skimming pumps operating properly. In concurrence with IDEQ, Potlatch shut down the FPRS for the winter on December 9, 1994, and plans to restart the system up in early April 1995.

constr.mem

Attachments:

Table 1 - Construction Activities

Table 2 - Pre-Construction Water/Product Measurements

Table 3 - Post-Construction Water/Product Measurements

Table 4 - System Startup Measurements

Construction Drawings for Avery Landing Recovery System



**Table 1 - Construction Activities**

Sheet 1 of 4

Date	Activities	Comments
9/8/94	Removed top 10 feet of soil from middle to east end of Trench No. 2 with dozer, stockpiled "clean" soil for testing.	Encountered wood and concrete debris and also demolished small concrete foundations.
9/9/94	Excavated soil from depths of 10 to 20 feet and placed crushed rock from depths of 20 to 11 feet, total of 75 linear feet.	Visible hydrocarbon contamination from 12- to 20-foot depth.
9/12/94	Attempted to excavate top 10 feet of soil from middle to west end of Trench No. 2 with dozer.	Encountered major concrete structures in the Old Roundhouse area, attempted to remove with CAT and excavator.
9/13/94	Excavated soil around concrete structures in Old Roundhouse area, stockpiled "clean" soil for testing.	Unable to break up concrete. Arranged for delivery of hydraulic hammer.
9/14/94	Attached hydraulic hammer to excavator to break up concrete. Detached hydraulic hammer. Took monitoring well measurements (see Table 2).	Hydraulic hammer developed leak. Sent hammer to shop.
9/15/94	Dug a test pit 175 feet east of Trench No. 2 (east end). Continued excavating to the east and placed crushed rock from depths of 20 to 11 feet, total of 50 linear feet on Trench No. 4.	Visible hydrocarbon contamination varied from surface to depth of 20 feet. IDEQ visited site and concurred with extending trench to the east.
9/16/94	Excavated additional 75 linear feet of Trench No. 4 placing crushed rock from depths of 20 to 11 feet. Eliminated MW-1 and MW-2 during trench excavation.	Visible hydrocarbon contamination varied from surface to 20 feet. Trench installed between concrete footing on north side and piping to the south.
9/19/94	Excavated additional 60 linear feet of Trench No. 4 placing crushed rock from depths of 20 to 11 feet.	Visible hydrocarbon contamination diminished near 36-inch cast iron culvert. Ended Trench No. 4 5 feet west of culvert.
9/20/94	Excavated 80 linear feet of Trench No. 3 placing crushed rock from depths of 20 to 11 feet. Installed extraction well in Trench No. 3, bottom elevation at 78.50 feet. Stockpiled "clean" soil for testing.	Pushed soil from Trench No. 1 back into excavation on top of crushed rock with dozer. Visible hydrocarbon contamination from 12- to 20-foot depths.

Table 1 - Continued

Sheet 2 of 4

Date	Activities	Comments
9/21/94	Excavated an additional 60 linear feet to complete Trench No. 3, placing crushed rock from depths of 20 to 11 feet. Installed extraction well in Trench No. 4, bottom elevation at 78.78 feet. Dug two test pits, located 175 and 250 feet west of pumphouse. Stockpiled "clean" soils for testing.	Visible hydrocarbon contamination from 12- to 20-foot depths. Test pit No. 1 (175'W) indicated visible hydrocarbon contamination from 12- to 20-foot depths. Test Pit No. 2 (250'W) indicated visible hydrocarbon contamination from 13- to 18-foot depths. IDEQ visited site and agreed HC-3 could be removed to install trenches.
9/22/94	Attached hydraulic hammer to excavator. Detached hydraulic hammer.	Hydraulic hammer ineffective on subsurface roundhouse concrete structures.
9/23/94	Installed extraction well in Trench No. 2, bottom elevation at 78.24 feet.	Decision was made to install fourth trench (Trench No. 1). Ordered additional equipment.
9/26/94	Excavated additional 85 linear feet to finish Trench No. 2. Placed crushed rock from depths of 20 to 11 feet. Removed monitoring well HC-3.	Visible hydrocarbon contamination from 12- to 20-foot depths. Trenched around the concrete structures.
9/27/94	Excavated 230 linear feet of infiltration trench to a depth from 6.5 to 7.5 feet and placed 2 feet of crushed rock for the infiltration bed. In addition, 140 linear feet of carrier pipe trench was excavated to a depth of 4.5 to 5.5 feet. The carrier and infiltration piping was installed with one foot of crushed rock placed over the pipe.	Infiltration trench repositioned to start 10 feet west of cast iron culvert. The carrier pipe was placed in the highway culvert and temporarily plugged.
9/28/94	Excavated 80 linear feet of Trench No. 1 placing crushed rock from depths of 20 to 11 feet. Installed extraction well in Trench No. 1, bottom elevation at 78.54 feet. Stockpiled "clean" soils for testing.	Visible hydrocarbon contamination from 12- to 20-foot depths. Contamination continued to the west. Encountered debris and ashes in upper 8 feet.
9/29/94	Excavated 85 linear feet of Trench No. 1 placing crushed rock from depths of 20 to 12 feet. Control building erected. Loaded out trench boxes. Stockpiled "clean" soils for testing. Place two piezometers in Trench No. 1.	Visible hydrocarbon contamination from 13- to 19-foot depths. Contamination continued to the west. Encountered debris and ashes in upper 8 feet.

Table 1 - Continued

Sheet 3 of 4

Date	Activities	Comments
9/30/94	Excavated 25 linear feet of Trench No. 1 placing crushed rock from depths of 20 to 12 feet. Stockpiled "clean" soils for testing. Sampled stockpiles (1 sample/100 cy), 16 samples total.	Visible hydrocarbon contamination from 13- to 19-foot depths. Contamination continued to the west. Decided to place an additional well in Trench No. 1.
10/3/94	Excavated 40 linear feet of Trench No. 1 placing crushed rock from depths of 20 to 12 feet. Installed additional extraction well in Trench No. 1. Well casing used was 18-inch plastic culvert. Slotted bottom 12 feet with circular saw. Filled in Trench Nos. 3 and 4 with soil (excavated and stockpiled next to each trench during construction).	Visible hydrocarbon contamination from 13- to 19-foot depths. Contamination continued to the west. Stopped excavating because of Avery sewer line.
10/4/94	Set manholes over extraction wells. Filled in Trench No. 1 with soil (excavated and stockpiled next to trench during construction).	Set manholes to ensure tops are one foot above adjacent area for drainage.
10/5/94	Filled in Trench No. 2 with concrete debris and "clean" soil stockpile. Excavated trench from highway culvert to near the control building, depth from 5 to 6 feet. Installed water pipe from culvert to south of control building.	Altered path of trench because of subsurface concrete structures. Used an additional 250 linear feet of 3-inch PVC pipe to avoid structures. IDEQ visited site and approved installing earthen dike.
10/6/94	Excavated trenches for electrical, water, and product piping, at a depth of 5 feet. Started to install utilities in trench.	Utility trenches were excavated in straight lines from well to well to minimize pipe usage.
10/7/94	Continued installing utilities and started to backfill trenches. Drilled holes in manholes, inserted piping, and grouted.	
10/10/94	Finished installing utilities and continued to backfill trenches.	
10/11/94	Finished backfilling trenches and around manholes. Started to level site with CAT. Built earthen dike around AST.	
10/12/94	Finished leveling site with CAT. Insulated control building. Installed product piping from control building to tank.	Trench contractor demobilized.
10/13/94	Installed control panels.	Hart Crowser demobilized until power hookup to control building completed.

Table 1 - Continued

Sheet 4 of 4

Date	Activities	Comments
10/24/94	Started installing flexible air and product lines through conduit pipe, electrician worked on power and sensor wiring.	Electrician completed power hook-up to control building and pulled power and sensor wires from the control house to the four extraction wells between 10/13 and 10/24.
10/25/94	Continued installing flexible air and product lines. Electrician worked on power and sensor wiring.	
10/26/94	Finish installing flexible air and product lines. Electrician worked on power and sensor wiring.	
10/27/94	Electrician finished power and sensor hookups. Set groundwater pumps in extraction wells. The intake for each pump was set 1.55 feet from bottom. Took measurements prior to starting extraction wells (see Table 3). Took measurements during operation of groundwater pumps (see Table 4).	Rained during night and all day. The river rose over a foot from day before. Started groundwater pumps at 1 p.m.
10/28/94	Took measurements prior to installing skimming pumps. Skimming pumps were set with gravity float at mid-point of traveling guides. Demobilized from site.	Extraction well No. 2 was cycling on and off indicating maximum drawdown. Skimming pumps for extraction well Nos. 2 and 4 were not operating properly because of sensor problems. The skimming pump for extraction well No. 3 was not working because of a broken part on control panel. Electrician was contacted, but was unable to come. Arrangements were made for the electrician to troubleshoot the problems and place the lids on each manhole.

TABLE-1.tbl

**Table 2 - Pre-Construction Water/Product Measurements**

Identification Number	Date	Depth to Product	Depth to Groundwater	Product Thickness	T.O.C. Elevation	Groundwater Elevation
MW-4	9/14/94	ND	12.88	Trace	99.76	86.88
MW-5	9/14/94	ND	10.55	ND	97.76	87.21
MW-11	9/14/94	12.0	NA	NA	98.16	NA
HC-1R	9/14/94	ND	13.71	ND	97.50	83.79
HC-4	9/14/94	11.15	NA	NA	98.94	NA
River	9/14/94	---	—	—	—	84.18

**Notes:**

All depths, thicknesses, and elevations in feet. Depths referenced to monitoring well tops of casing (T.O.C.).  
Elevations referenced to southwest corner of concrete pad (100.0 feet).

NA - Not Available

ND - Not Detected with measuring tape and detection paste

TABLE-2.tbl

**Table 3 - Post-Construction Water/Product Measurements**

Identification Number	Date	Depth to Product	Depth to Groundwater	Product Thickness	T.O.C. Elevation	Groundwater Elevation
MW-5	10/27/94	ND	10.45	ND	97.76	87.31
HC-1R	10/27/94	ND	13.25	ND	97.50	84.25
HC-4	10/27/94	13.30	15.34	2.04	98.94	83.60
EW-1	10/27/94	ND	11.00	Trace	95.34	84.34
EW-2	10/27/94	ND	10.37	Trace	95.24	84.87
EW-3	10/27/94	ND	10.05	Trace	95.78	85.73
EW-4	10/27/94	ND	8.05	Trace	94.32	86.27
P-1	10/27/94	ND	17.31	ND	101.42	84.11
P-2	10/27/94	ND	15.87	ND	100.06	84.19
River	10/27/94	—	—	—	—	84.41

**Notes:**

MW-4 and MW-11 were inaccessible at time of measurements.

All depths, thicknesses, and elevations in feet. Depths referenced to monitoring well tops of casing (T.O.C.)

Elevations referenced to southwest corner of concrete pad (100.0 feet).

ND - Not Detected with interface probe.

TABLE-3.TBL



**Table 4 - System Startup Measurements**

Identification Number	Date	Time	Depth to Product	Depth to Groundwater	Product Thickness	T.O.C. Elevations	Groundwater Elevations
EW-1	10/27	1 p.m.	ND	11.00	Trace	95.34	84.34
	10/27	3 p.m.	ND	11.94	Trace	95.34	83.40
	10/28	8 a.m.	ND	12.02	Trace	95.34	83.32
EW-2	10/27	1 p.m.	ND	10.37	Trace	95.24	84.87
	10/27	3 p.m.	ND	10.77	Trace	95.24	84.47
	10/28	8 a.m.	12.57	12.80	0.23	95.24	82.44
EW-3	10/27	1 p.m.	ND	10.05	Trace	95.78	85.73
	10/27	3 p.m.	ND	11.35	Trace	95.78	84.43
	10/28	8 a.m.	ND	10.98	Trace	95.78	84.80
EW-4	10/27	1 p.m.	ND	8.05	Trace	94.32	86.27
	10/27	3 p.m.	8.81	8.83	0.02	94.32	85.49
	10/28	8 a.m.	ND	8.16	Trace	94.32	86.16
P-1	10/27	1 p.m.	ND	17.31	ND	101.42	84.11
	10/27	3 p.m.	ND	17.65	ND	101.42	83.77
	10/28	8 a.m.	ND	17.64	ND	101.42	83.78
P-2	10/27	1 p.m.	ND	15.87	ND	100.06	84.39
	10/27	3 p.m.	ND	16.16	ND	100.06	83.90
	10/28	8 a.m.	ND	16.15	ND	100.06	83.91
River	10/27	1 p.m.	—	—	—	—	84.73
	10/27	3 p.m.	—	—	—	—	84.93
	10/28	8 a.m.	—	—	—	—	85.03

**Notes:**

System started 10/27/94 at 1 p.m.

All depths, thicknesses, and elevations in feet. Depths referenced to monitoring well tops of casing (T.O.C). Elevations referenced to southwest corner of concrete pad (100.0 feet).

ND - Not Detected with interface probe.

TABLE-4.tbl

**Table 4 - System Startup Measurements**

Identification Number	Date	Time	Depth to Product	Depth to Groundwater	Product Thickness	T.O.C. Elevations	Groundwater Elevations
EW-1	10/27	1 p.m.	ND	11.00	Trace	95.34	84.34
	10/27	3 p.m.	ND	11.94	Trace	95.34	83.40
	10/28	8 a.m.	ND	12.02	Trace	95.34	83.32
EW-2	10/27	1 p.m.	ND	10.37	Trace	95.24	84.87
	10/27	3 p.m.	ND	10.77	Trace	95.24	84.47
	10/28	8 a.m.	12.57	12.80	0.23	95.24	82.44
EW-3	10/27	1 p.m.	ND	10.05	Trace	95.78	85.73
	10/27	3 p.m.	ND	11.35	Trace	95.78	84.43
	10/28	8 a.m.	ND	10.98	Trace	95.78	84.80
EW-4	10/27	1 p.m.	ND	8.05	Trace	94.32	86.27
	10/27	3 p.m.	8.81	8.83	0.02	94.32	85.49
	10/28	8 a.m.	ND	8.16	Trace	94.32	86.16
P-1	10/27	1 p.m.	ND	17.31	ND	101.42	84.11
	10/27	3 p.m.	ND	17.65	ND	101.42	83.77
	10/28	8 a.m.	ND	17.64	ND	101.42	83.78
P-2	10/27	1 p.m.	ND	15.87	ND	100.06	84.39
	10/27	3 p.m.	ND	16.16	ND	100.06	83.90
	10/28	8 a.m.	ND	16.15	ND	100.06	83.91
River	10/27	1 p.m.	—	—	—	—	84.73
	10/27	3 p.m.	—	—	—	—	84.93
	10/28	8 a.m.	—	—	—	—	85.03

**Notes:**

System started 10/27/94 at 1 p.m.

All depths, thicknesses, and elevations in feet. Depths referenced to monitoring well tops of casing (T.O.C). Elevations referenced to southwest corner of concrete pad (100.0 feet).

ND - Not Detected with interface probe.

TABLE-4.tbl



# HARTCROWSER

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www.hartcrowser.com

J-2296-07

*why wasn't monit well MW-11 measured?*

April 28, 1999

Mr. Gregory A. Rapp  
Construction Services Manager  
Potlatch Corporation  
1100 Railroad Avenue  
P.O. Box 386  
St. Maries, Idaho 83861

Re: First Quarter 1999 Performance Report  
Avery Landing Recovery System

**RECEIVED**

**APR 30 1999**

IDHW-DEQ  
Coeur d'Alene Field Office

Dear Mr. Rapp:

Hart Crowser is pleased to present the First Quarter 1999 Performance Report for the Avery Landing free product recovery system. This letter report presents the first quarter groundwater elevations, product thickness measurements, and recovered free product volume.

## GROUNDWATER AND PRODUCT QUARTERLY MONITORING

Three extraction wells (EW-2 through EW-4), three monitoring wells (HC-1, HC-4, and MW-5), and one piezometer (P-1) were monitored on March 18, 1999. At each monitoring location, depth to product and depth to groundwater measurements were performed using a Flexidip, a free product measuring device. The groundwater elevations at EW-1 and P-2 were calculated from measured elevations at surrounding wells. The river elevation adjacent to extraction well vault EW-3 was also monitored by measuring the elevation difference between the top of the vault and the river. The river elevations at the remaining three extraction well vaults were calculated based on the average slope of the river bottom and the distance between vaults. These measurements and calculations are presented with those of previous monitoring rounds in Table 1. Well locations and current groundwater contours are shown on Figure 1.

During the March 18 site visit, the extraction system was not maintaining a water table depression along the St. Joe River. The extraction well operation was observed as follows:

*why couldn't  
measured right in the well?  
gw elev. be  
(Covered w/ snow)*



- ▶ EW-1 is no longer in use, as described in the 1998 Annual Report;
- ▶ EW-2 was operating and maintaining groundwater capture as indicated on Figure 1;
- ▶ EW-3 was operating, but was not maintaining groundwater capture. This could be the result of high groundwater flow due to spring runoff; and
- ▶ EW-4 was not operating during the March 18 site visit because of pump failure. During the site visit on April 6, 1999, the motor and pump had been replaced, and EW-4 is currently operating.

During weekly system monitoring done by Potlatch, free product was discovered in the ditch on the opposite side of the road. We planned to excavate the ditch to determine if the treatment system re-injection piping had a leak. On April 6, 1999, we excavated in the area of the re-injection trench and we discovered a significant amount of free product in the soil. While locating the injection piping, we broke the pipe. We, therefore, could not tell if the pipe was already broken prior to our excavation. After repairing the pipe, the system was restarted. Once again, water was observed in the ditch about one week later. Other than residual free product in the ditch, no further free product has been observed since then. Absorbent booms have been placed in the ditch to catch any residual free product encountered.

*water or oil?*

We have not been able to determine the source of the product in the soil above the re-injection piping. The source could be an unknown spill from the former storage tank that was located just up the hill. Another possibility is the treatment system water depression pumps are transferring free product from the extraction area to the re-injection area. To minimize the possibility of the total fluids pumps transferring free product we reset the level control probes. This may reduce the system's ability to maintain groundwater capture.

*explain*

## FREE PRODUCT RECOVERY

The total volume of free product in the recovery tank is approximately 640 gallons. The 1998 Annual Report contained an error in estimated free product recovery. The treatment system is currently recovering about 50 gallons per quarter.

## PROJECT SCHEDULE

Table 2 presents the project schedule for the remainder of 1999. Since the groundwater extraction system will be operating year-round during 1999, the second quarterly monitoring event corresponds to the second quarter of the calendar year. As indicated, we plan on performing the next monitoring event on June 24, 1999, and will submit the second quarter monitoring report by



Potlatch Corporation  
April 28, 1999

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Page 3

July 16, 1999. If you should decide that this date needs to be altered, please let us know as soon as possible.

**Table 2 - Avery Landing Recovery System  
Remaining Project Schedule for 1999**

Remaining Schedule	Date
Conduct Second Quarter Monitoring	June 24, 1999
Submit Second Quarter Performance Report	July 16, 1999
Conduct Third Quarter Monitoring	August 12, 1999
Submit Third Quarter Performance Report	September 3, 1999
Conduct Fourth Quarter Monitoring	September 28, 1999
Submit Fourth Quarter Performance Report	November 9, 1999
Submit Annual Report	February 5, 2000

## LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar location, at the time the work was performed. It is intended for the exclusive use of the Potlatch Corporation for specific application to the referenced property.

If additional information or clarification is required, please call Terry Montoya at (206) 324-9530.

Sincerely,

**HART CROWSER, INC.**

**TERRY MONTOYA**  
Project Engineer

**MATT SCHULTZ, P.E.**  
Senior Associate Engineer

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### Attachments:

Table 1 - Avery Landing Groundwater and River Monitoring Data  
Figure 1 - Avery Landing Third Quarter, Groundwater Flow Direction Map

cc: Kreg Beck, Idaho Department of Environmental Quality

Table 1 - Avery Landing Groundwater and River Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
EW-1	10/27/94	ND	11	0	95.34	84.34
	6/30/95	ND	10.9	0	95.34	84.44
	9/21/95	11.25	11.27	0.02	95.34	84.07
	7/11/96	ND	9.74	0	95.34	85.60
	9/11/96	ND	10.88	0	95.34	84.46
	11/5/96	ND	11.94	0	95.34	83.40
	7/17/97	ND	10.38	0	95.34	84.96
	10/9/97	ND	13.17	0	95.34	82.17
	6/25/98	ND	10.01	0	95.34	85.33
	8/12/98	NM	10.52	0	95.34	84.82
	10/22/98	Sheen	10.86	0	95.34	84.48
	3/18/99				95.34	85.57 ****
EW-2	10/27/94	ND	10.37	0	95.24	84.87
	6/30/95	10.57	10.89	0.32	95.24	84.35
	9/21/95	13.9	13.92	0.02	95.24	81.32
	7/11/96	11.03	11.66	0.63	95.24	83.58
	9/11/96	Sheen	14.00	0	95.24	81.24
	11/5/96	Sheen	12.27	0	95.24	82.97
	7/17/97	8.99	9.09	0.1	95.24	86.15
	10/9/97	Sheen	15.44	0	95.24	79.80
	6/25/98	9.19	9.64	0.45	95.24	85.60
	8/12/98	NM	9.99	0	95.24	85.25
	10/22/98	Sheen	10.94	0	95.24	84.30
	3/18/99	10.17	10.27	0.1	95.24	84.97
EW-3	10/27/94	ND	10.05	0	95.78	85.73
	6/30/95	9.35	9.8	0.45	95.78	85.98
	9/21/95	10.92	11.08+	0.16	95.78	84.70
	7/11/96	8.53	8.64	0.11	95.78	87.14
	9/11/96	10.75	11.70	0.95	95.78	84.08
	11/5/96	Sheen	11.8	0	95.78	83.98
	7/17/97	9.13	9.33	0.2	95.78	86.45
	10/9/97	10.9	11.68	0.78	95.78	84.10
	6/25/98	8.78	9.43	0.65	95.78	86.35
	8/12/98	NM	11	0	95.78	84.78
	10/22/98	12.58	13.38	0.8	95.78	82.40
	3/18/99	9.03	9.23	0.8	95.78	86.55

Table 1 - Avery Landing Groundwater and River Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
EW-4	10/27/94	ND	8.05	0	94.32	86.27
	6/30/95	7.84	7.85	0.01	94.32	86.47
	9/21/95	8.22	8.24	0.02	94.32	86.08
	7/11/96	Sheen	6.44	0	94.32	87.88
	11/5/96	Sheen	8.08	0	94.32	86.24
	7/17/97	Sheen	5.43	0	94.32	88.89
	10/9/97	Sheen	7.11	0	94.32	87.21
	6/25/98	5.28	5.3	0.02	94.32	89.02
	8/12/98	NM	8.98	0	94.32	85.34
	10/22/98	ND	8.98	0	94.32	85.34
	3/18/99	5.18	5.26	0	94.32	89.06
HC-1	10/27/94	ND	13.25	0	97.50	84.25
	6/30/95	ND	12.00	0	97.50	85.50
	9/21/95	NM	13.42	0	97.50	84.08
	7/11/96	ND	11.92	0	97.50	85.58
	9/11/96	ND	12.90	0	97.50	84.60
	11/5/96	Could not locate due to snow				
	7/17/97	ND	11.27	0	97.50	86.23
	10/9/97	ND	12.87	0	97.50	84.63
	6/25/98	ND	11.85	0	97.50	85.65
	8/12/98	NM	12.97	0	97.50	84.53
	10/22/98	ND	13.1	0	97.50	84.40
	3/18/99	ND	11.7	0	97.50	85.80
HC-4	10/27/94	13.3	15.34	2.04	98.94	83.60
	6/30/95	11.89	15.49	3.6	98.94	83.45
	9/21/95	13.67	NM	NM	98.94	85.27
	7/11/96	11.58	12.93	1.35	98.94	86.01
	9/11/96	13.53	13.93	0.40	98.94	85.01
	11/5/96	11.82	13.62	1.80	98.94	85.32
	7/17/97	11.65	13.25	1.60	98.94	85.69
	10/9/97	12.67	14.92	2.25	98.94	84.02
	6/25/98	11.53	12.49	0.96	98.94	86.45
	8/12/98	NM	13.9	NM	98.94	85.04
	10/22/98	10.3	14.7	4.40	98.94	84.24
	3/18/99	10.5	14.05	4.40	98.94	84.89
HC-5	11/5/96	ND	11.22	0	97.95	86.73
	7/17/97	Monument under standing water				
	10/9/97	Monument under standing water				
	6/25/98	Lost during road construction				

Table 1 - Avery Landing Groundwater and River Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
MW-4	9/14/94	ND	12.88	0	99.76	86.88
	6/30/95	ND	10.19	0	99.76	89.57
	9/21/95	ND	11.95	0	99.76	87.81
	7/11/96	Sheen	10.18	0	99.76	89.58
	9/11/96	Sheen	11.33	0	99.76	88.43
	11/5/96	Lost during road construction				
MW-5	10/27/94	ND	10.45	0	97.76	87.31
	6/30/95	ND	9.13	0	97.76	88.63
	9/21/95	ND	10.83	0	97.76	86.93
	7/11/96	ND	8.98	0	97.76	88.78
	9/11/96	ND	10.71	0	97.76	87.05
	11/5/96	ND	10.65	0	97.76	87.11
	7/17/97	ND	8.75	0	97.76	89.01
	10/9/97	ND	10.89	0	97.76	86.87
	6/25/98	ND	8.56	0	97.76	89.20
	8/12/98	NM	10.68	0	97.76	87.08
	10/22/98	ND	13.5	0	97.76	84.26
	3/18/99	ND	8.8	0	97.76	88.96
MW-11	9/14/94	12	NA	NA	98.16	NA
	6/30/95	5.54	7.25	1.71	98.16	90.41
	7/11/96	6.34	10.00	3.66	98.16	88.16
	9/11/96	3.25	7.20	3.95	98.16	90.96
	11/5/96	3.05	7.20	4.15	98.16	90.96
	7/17/97	6.33	9.99	3.66	98.16	88.17
	8/12/98	NM	3.90	NM	98.16	94.26
	10/22/98	6.96	8.00	1.04	98.16	90.16
P-1	10/27/94	ND	17.31	0	101.42	84.11
	6/30/95	ND	16.72	0	101.42	84.70
	9/21/95	ND	17.4	0	101.42	84.02
	7/11/96	ND	15.87	0	101.42	85.55
	9/11/96	ND	16.98	0	101.42	84.44
	11/5/96	ND	17.06	0	101.42	84.36
	7/17/97	ND	15.34	0	101.42	86.08
	10/9/97	ND	17.64	0	101.42	83.78
	6/25/98	ND	14.53	0	101.42	86.89
	8/12/98	NM	16.72	0	101.42	84.70
	10/22/98	ND	15.6	0	101.42	85.82
	3/18/99	ND	15.65	0	101.42	85.77



Table 1 - Avery Landing Groundwater and River Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
P-2	10/27/94	ND	15.87	0	100.06	84.19
	6/30/95	ND	15.26	0	100.06	84.80
	9/21/95	ND	16.04	0	100.06	84.02
	7/11/96	ND	14.52	0	100.06	85.54
	9/11/96	ND	15.62	0	100.06	84.44
	11/5/96	ND	15.08	0	100.06	84.98
	7/17/97	ND	13.92	0	100.06	86.14
	10/9/97	ND	16.09	0	100.06	83.97
	6/25/98	ND	15.95	0	100.06	84.11
	8/12/98	NM	15.3	0	100.06	84.76
	10/22/98	NM	16.95	0	100.06	83.11
	3/18/99	NM				86.02 ****
River at EW-1	10/27/94					83.12 *
	6/30/95					84.03 **
	9/21/95					82.24
	7/11/96					83.74 ***
	9/11/96					82.56
	11/5/96					83.16
	7/17/97					82.39
	10/9/97					83.00
	6/25/98					85.22
	8/12/98					85.42
	10/22/98					85.00
	3/18/99					83.93
River at EW-2	10/27/94					84.41
	6/30/95					85.32
	9/21/95					83.53
	7/11/96					85.03
	9/11/96					83.85
	11/5/96					83.59
	7/17/97					85.35
	10/9/97					84.20
	6/25/98					86.42
	8/12/98					86.62
	10/22/98					86.20
	3/18/99					85.13

Table 1 - Avery Landing Groundwater and River Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
River at EW-3	10/27/94					85.16 *
	6/30/95					86.07
	9/21/95					84.28
	7/11/96					85.78 ***
	9/11/96					84.60
	11/5/96					84.10
	7/17/97					86.31
	10/9/97					85.16
	6/25/98					85.16
	8/12/98					85.65
	10/22/98					85.23
	3/18/99					86.10
River at EW-4	10/27/94					86.49 *
	6/30/95					87.40
	9/21/95					85.61
	7/11/96					87.11 ***
	9/11/96					85.93
	11/5/96					86.44
	7/17/97					87.27
	10/9/97					86.12
	6/25/98					88.34
	8/12/98					88.54
	10/22/98					88.12
	3/18/99					87.05

## Notes:

All measurements in feet.

\* River elevation was extrapolated from the river surface slope measured in 1995 and the river elevation measured south of EW-2 in 1994.

\*\* River elevation was extrapolated from river surface slope, based on river elevations measured south of EW-2, EW-3, and EW-4 in 1995.

\*\*\* River elevation was extrapolated from river surface slope, and the wood dock benchmark.

\*\*\*\* Groundwater elevation was interpolated from measured elevations at EW-2 and P-1

T.O.C. - Top of Casing

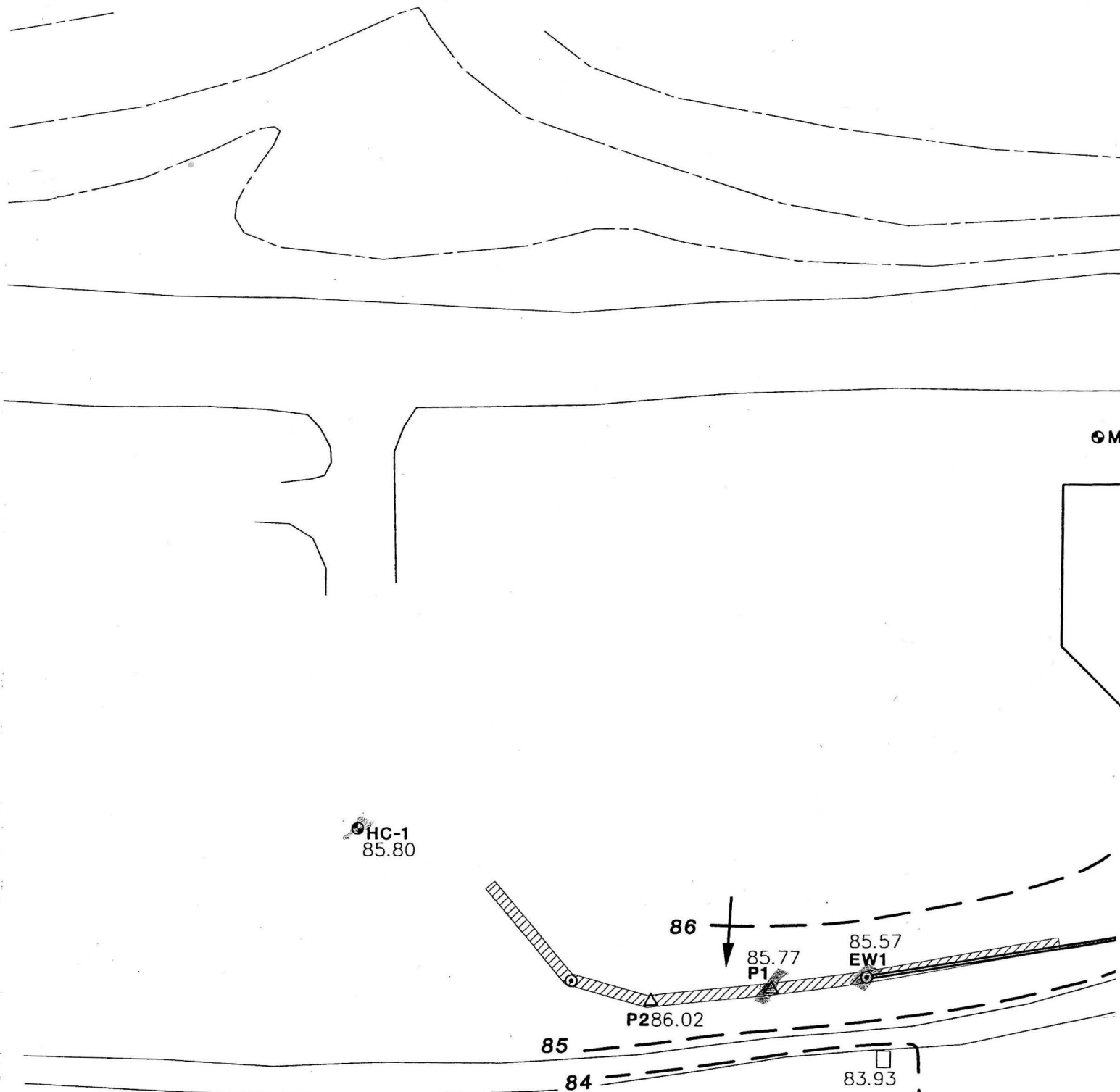
ND - Not Detected

NA - Not Available

NM - Not Measured

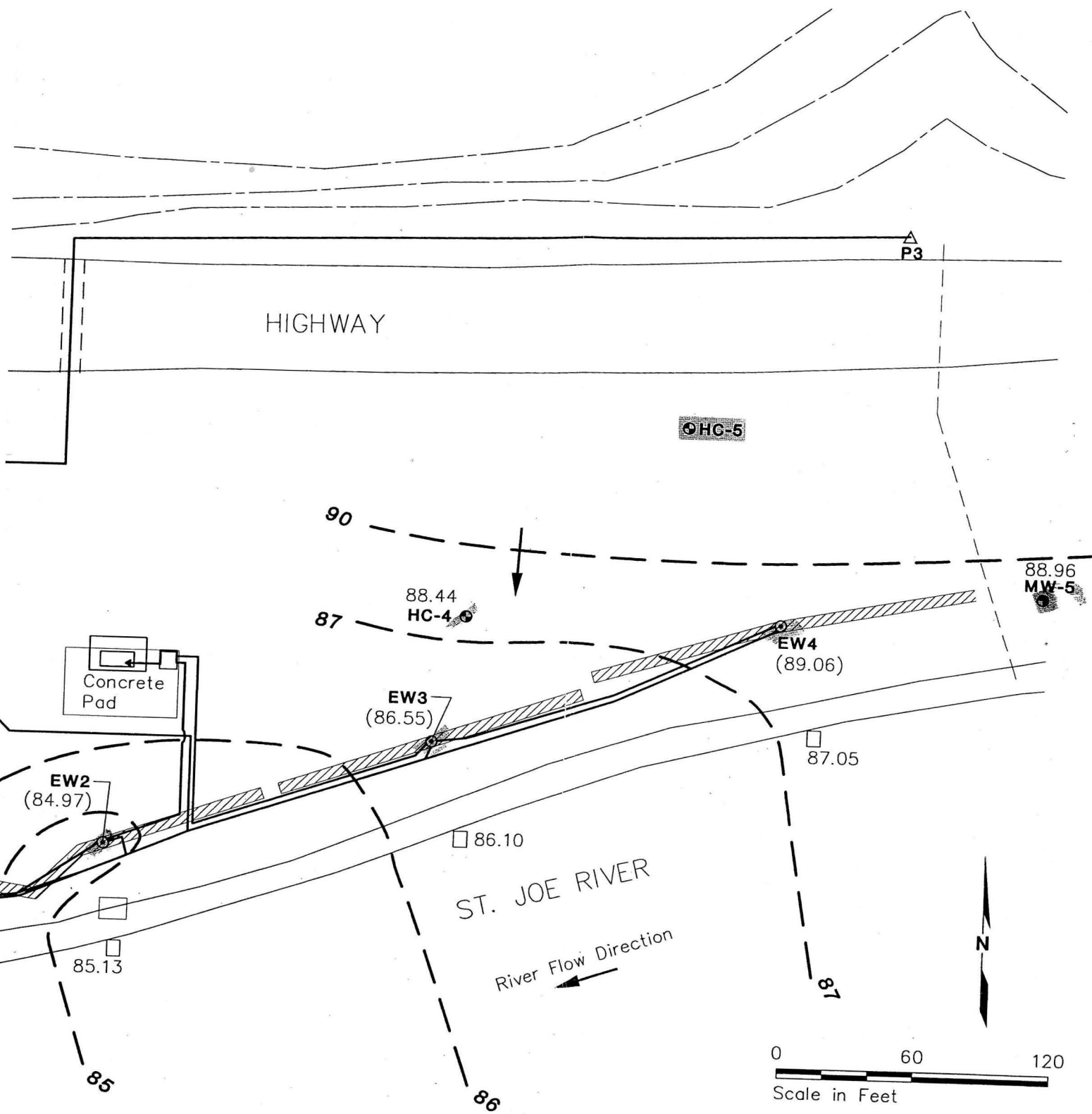
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# Avery Landing First Quarter 1999 Groundwater Flow



- MW-4** Monitoring Well Location and Number  
 83.79 Groundwater Elevation in Feet (3/18/99)  
 (86.69) Corrected Groundwater Elevation due to Free Product in Feet (3/18/99)
- EW1** Extraction Well Location and Number
- P1** Piezometer Location and Number
- HC-5** Lost During Construction (1997)

# Direction Map



- 7.40 Estimated River Elevation in Feet (3/18/99)
- Groundwater Elevation Contour in Feet
- Approximate Groundwater Flow Direction
- ▨ Extraction Trench

Note: Elevation datum is southwest corner of Concrete Pad (100.00 feet)

**HARTCROWSER**

J-2296-07 4/99  
Figure 1

IDAHO DEPARTMENT OF HEALTH AND WELFARE

In the matter of: ) CONSENT ORDER  
Potlatch Corporation -- ) Idaho Code § 39-108  
Avery Landing)

1. Pursuant to Idaho Code § 39-108 (Idaho Environmental Protection and Health Act), the Idaho Department of Health and Welfare, Division of Environmental Quality (Department) enters into this Consent Order with Potlatch Corporation (hereafter "Respondent").
2. Respondent is currently the owner of a property located near Avery, Idaho (hereafter "Property" and is more particularly described in Exhibit A hereto).
3. The Avery Landing site is adjacent to the St. Joe River. Petroleum products have been discovered in the ground water at the Avery Landing site and discharging from the site into the St. Joe River.
4. Potlatch has voluntarily prepared and the Department has approved a Remediation Plan that describes a free phase petroleum product recovery system. The Remediation Plan is attached hereto as Exhibit B and is incorporated herein as a part of this Consent Order. Respondent shall, to the extent that access to undertake the same exists or is granted, fully implement all aspects of the Remediation Plan by the dates set forth in the Remediation plan, and thereby shall:
  - A. Submit final plans and specifications regarding the recovery system as provided in the Remediation Plan;
  - B. Construct, operate and maintain the recovery system as provided in the Remediation Plan;
  - C. Conduct water level and product monitoring and submit the results to the Department as provided in the Remediation Plan. ~~Three-day notification to the Department, prior to any sampling event, is required.~~
- D. Submit by the dates and in the manner provided in the Remediation Plan, the following documents and information:

- (1) final plans and specifications, including a project implementation schedule, regarding the recovery system;
- (2) laboratory results and analysis of soils excavated during construction of the recovery system;
- (3) water level monitoring results and analysis of ground water flow direction prior to construction of system;
- (4) results of quarterly product and water level monitoring;
- (5) a report setting forth a capture zone analysis and an analysis of the effectiveness of the system submitted three (3) weeks after the first quarter of operation;
- (6) product thickness sampling results taken after the shutdown of the system to determine if recovery is complete; and
- (7) reports, submitted on an annual basis, beginning one year after the effective date of this Consent Order, that shall describe (i) the total amount of product recovered in that year and the destination of the product recovered, (ii) an analysis of the effectiveness of the recovery system, and (iii) a schedule for the next year's product and water level monitoring. The Department shall review the annual reports in terms of the effectiveness and continued practicality of the use of the recovery system, and in order to evaluate Respondent's compliance with this Consent Order. Based upon the reports, any party to this Consent Order may request, in writing, a modification of the approved Remediation Plan, which shall be promptly reviewed and acted upon by the Department. The Department shall also approve or require modification of the schedules for water level and product monitoring based upon information in the reports; and

E. Continue to operate the recovery system pursuant to the Remediation Plan until the free product thickness as measured in all wells and the recovery trench is less than one tenth (0.1) inch. After completion of recovery, the recovery system shall be shut down for a period of at least one (1) year. The Department shall notify the Respondent in writing regarding the length of the shutdown. If, at the end of the shutdown period, the

product thickness levels exceed one tenth (0.1) inch in any monitoring well or the recovery trench, Respondent shall restart the recovery system and operate it until the product thickness levels reach one tenth (0.1) inch or less in all monitoring wells and the recovery trench. Thereafter, the system shall be shut down, monitored and restarted as provided above.

After collecting at least two (2) years of recovery and monitoring data, and product thickness is greater than one tenth (0.1) inch, Respondent may propose an alternative recovery system shutdown criteria if free product recovery rate and thickness of product have shown an asymptotically decreasing rate over time. Upon Department approval of the alternative recovery system shutdown criteria, agreement with the Department that asymptotic levels have been reached, and discharge to the river is controlled by the recovery effort (no sheen on the water), Respondent may petition the Department for site closure. After reaching asymptotic levels, the recovery system shall be shut down for a period of at least one (1) year. The Department shall notify Respondent in writing regarding the length of shutdown. If at the end of the shutdown period the levels of product have changed from those considered asymptotic, Respondent shall restart the recovery system and operate it until levels are truly asymptotic. Should levels remain asymptotic, the closure of the site is dependent on the discharge from the site to the river. If a sheen is present on the river from petroleum seepage from the site following system shutdown, Respondent has the option of restarting the recovery system and/or installing product skimmer pumps in the recovery trench to control petroleum seepage. The Department agrees that skimmer pumps capturing the majority of the petroleum entering the recovery trench is a best management practice to control petroleum discharge to the river and other control measures will not be required. Once petroleum seepage is controlled by the skimmer pumps, Respondent may again petition the Department for closure after a one (1) year shutdown period. Any other methods to control discharge to the St. Joe River must be approved by the Department in writing and take place prior to the one (1) year shutdown period. Should petroleum seepage begin prior to the end of the one (1) year shutdown period, Respondent shall, as a best management practice, restart the skimmer pumps.

If the collected data establish that the 0.1 inch product thickness or alternative shutdown conditions are met, the Department understands and agrees that further operation

of the recovery system would not be justified and the site will be closed.

A flow chart to illustrate the pathway of possible site closure was developed on March 25, 1994 and is attached to this Consent Order.

5. Work undertaken pursuant to this Consent Order shall not deviate from the Department approved Remediation Plan without prior notification to and written approval by the Department.
6. Respondent shall be responsible for obtaining all required permits or agreements for the disposal or treatment of any contaminated material. The Department will provide assistance in identifying necessary permits and will expedite issuance of same. The Department will also take the lead in attempting to obtain right of entry for Respondent on the Federal Highway Administration right-of-way and the Theriault property as necessary to implement the Remediation Plan.
7. All monitoring wells shall be properly closed in accordance with Idaho Department of Water Resources regulations prior to termination of this Consent Order.
8. All communications required by this Consent Order shall be addressed to:  
  
Gwen P. Burr, Regional Administrator  
North Idaho Regional Office  
Division of Environmental Quality  
2110 Ironwood Parkway  
Coeur d'Alene, Idaho 83814  
  
Douglas M. Conde  
Deputy Attorney General  
Division of Environmental Quality  
1410 N. Hilton  
Boise, Idaho 83706
9. Respondent shall allow the Department access to the portions of the site it owns for remediation oversight and to take and/or split samples.
10. This Consent Order shall not in any way relieve Respondent from any obligation to comply with any provision of the Idaho Water Quality Standards and Wastewater Treatment Requirements or any other applicable local, state, or federal laws.
11. Subject to Respondent's compliance with the terms of this Consent Order, the Department agrees that full compliance with this Consent Order is a complete and final resolution of all



claims by the Department against a complying Respondent relating to the subjects covered by this Consent Order, and the Department hereby releases Respondent with respect to the above-mentioned claims.

12. Upon fulfilling the requirements of this Consent Order, Respondent may petition the Department in writing for a termination of this Consent Order. This Consent Order shall remain in full force and effect until the Department acknowledges in writing that the Consent Order is terminated and that Respondent has fulfilled all requirements of this Consent Order.
13. This Consent Order shall bind Respondent and its successors and assigns until terminated in writing by the Department as provided in paragraph 12.
14. The effective date of this Consent Order shall be the date of signature by all parties.

DATED this 16<sup>th</sup> day of AUGUST, 1994.

IDAHO DEPARTMENT OF HEALTH AND WELFARE

By: Jerry L. Harris

Jerry L. Harris, Director  
Idaho Department of Health and Welfare

DATED this 18 day of August, 1994.

POTLATCH CORPORATION

By: Richard K. Kelly

Richard K. Kelly  
Vice President, Western Wood Products Division  
Potlatch Corporation

DESCRIPTION OF POTLATCH PROPERTY  
AVERY, IDAHO

Part of Government Lot 1 of Section 16, Township 45 North, Range 5 East, Boise Meridian, Shoshone County, Idaho, located between the southerly boundary of FHWA Forest Highway 50 and the northerly bank of the St. Joe River.

EXHIBIT A

**REMEDATION PLAN FOR AVERY LANDING****A. THE SYSTEM**

The recovery system is designed to recover free phase petroleum product. A trench recovery system will be used to capture product currently moving into the St. Joe River, by depressing the ground water and intercepting the product along this flow path.

**B. SYSTEM DESIGN**

The design of the recovery system is described in the initial drawings attached hereto. The recovery system design may change depending on field conditions. The trench length will be at least 200 feet long in all cases. Within thirty (30) days after the effective date of the Consent Order regarding Avery Landing, final plans and specifications stamped by an Idaho registered, professional engineer shall be submitted to the Department for review and approval. The plans and specifications shall be revised until approved by the Department. The Department shall notify Potlatch and CMC, in writing, of its approval.

Prior to construction, Potlatch and CMC shall measure the water level in new and existing monitoring wells (the wells are described in paragraph D) and submit the results and an analysis of ground water flow direction to the Department. The Department shall review the submitted material to determine whether the location of the system is adequate to capture the contaminant plume. The Department shall notify Potlatch and CMC, in writing, whether the location of the system is adequate or should be changed.

**C. CONSTRUCTION**

Unless a different time is agreed to by the parties hereto, Potlatch and CMC shall begin construction of the recovery system in accordance with the project implementation schedule submitted with the plans and specifications.

Construction will involve exposure of contaminated material to the environment. All construction practices must be planned or field modified to minimize the release of contaminated materials to the environment. This includes not digging contaminated materials during periods when runoff is occurring to the St. Joe River from the excavation area. Precautions to control runoff from sudden storm events need to be taken.

Soil excavated during construction that is not used to backfill the recovery trench shall be treated and/or disposed of in accordance with applicable state and federal law. Potlatch and CMC shall analyze the excavated soil not used for

backfill, using composite sampling, for PCBs, semi-volatile organic compounds, metals and total petroleum hydrocarbons (TPH). The laboratory results and analysis shall be submitted to the Department within three (3) weeks after receipt by Potlatch and CMC. TPH levels shall be determined for every one hundred (100) cubic yards of soil. If the laboratory results and analysis shows that the excavated soil constitutes a hazardous waste, it must be handled according to applicable state and federal law. If the soil does not constitute a hazardous waste, but contains over 1000 mg/kg TPH, then the material shall be landfarmed, or otherwise treated or disposed of in a manner approved by the Department. If the soil contains TPH levels less than 1000 mg/kg, the Department shall not address its treatment or disposal. Within thirty (30) days of the submittal of the soil analysis to the Department, the Department shall notify Potlatch and CMC, in writing, regarding whether the soil constitutes a hazardous waste, or, if not a hazardous waste, whether it may be landfarmed. If landfarming contaminated soil at the site is approved by the Department, landfarming shall be carried out as follows:

1. Excavated soil must be stockpiled and covered, protecting the material from precipitation until seasonally warm weather.
2. Once warm weather occurs, the soil is spread in a layer not thicker than six (6) inches. (If contaminated soil is landfarmed off-site, an impermeable liner is required and the location must be approved by DEQ.)
3. The soil must be treated until the levels of TPH is measured at less than 1000 mg/kg. Sample locations may be determined by the Department at a later date (typically the Department requires one sample for every 100 cubic yards of soil). To prevent surface runoff, a minimum of one foot high berm shall be built around the landfarm using non-contaminated material, to prevent runoff of contaminated soil from reaching the river.

#### D. MONITORING

Two types of monitoring are required prior to and during operation: Water Level Monitoring, and Product Monitoring.

1. **Water Level Monitoring** - Water level monitoring will establish the presence of a ground water capture zone around the recovery trench. ~~Existing wells will be used in this monitoring. The existing wells are HC-1R, HC-2, HC-3, HC-4, MW-1, MW-5, and MW-6~~ as identified in the attached Hart Crowser Figure 1. Access for water level measurement in the recovery trench is required.

Monthly measurements of depth to water shall be made during the first quarter of operation. Quarterly measurements shall be made for the balance of the first year of operation. A water level measurement schedule for system life will be developed after review of the first year data. The schedule shall be submitted to the Department for review and approval, as part of an annual report. Potlatch and CMC shall submit a report including a capture zone analysis and an analysis on the effectiveness of the recovery system within three (3) weeks after the first three months of the operation of the system. A totalizing flow meter is required to record the volume of water pumped to the infiltration trench.

The Department shall review the first quarter report. If requested by the Department, based upon its review of the first quarter report, the recovery system shall be modified if necessary to create a capture zone encompassing the known contaminated area.

2. Product Monitoring - Monitoring of the product will be used to determine when the free phase recovery is complete and the use of the recovered product.

Product thickness will be measured in wells ~~WC-1, WC-2, WC-3, WC-4, WC-5, and WC-6~~ or as agreed to by Potlatch, CMC, and the Department. Monthly measurements of product thickness shall be made during the first quarter of operation and quarterly measurements shall be done for the balance of the first year of operation. A product thickness measurement schedule for system life will be developed after review of the first year data. The schedule must be submitted to the Department for review and written approval, as part of an annual report.

A representative sample of the product must be analyzed and the analysis submitted to the Department, along with knowledge of process (source determination as understood by Potlatch and CMC), prior to initial disposal, to determine the status of the product as a hazardous waste. Testing shall be by toxicity characteristic leaching procedure (TCLP). The recovered product must be handled according to state and federal regulations.

The total amount of product recovered and final destination of the product will be reported to the Department on an annual basis, as part of an annual report.

3. Monitoring Data - Unless specified otherwise, all laboratory results, analysis and other data collected from the site will be forwarded to the Department within three (3) weeks of receipt by Potlatch and CMC.

#### E. OPERATION AND MAINTENANCE CONSIDERATIONS

Winter time operation of the recovery system could potentially be impossible in the harsh climate of Avery. Potlatch and CMC shall make a reasonable effort to operate the system year round but recognize weather limitations. Shutdowns of the system in extremely cold weather and/or deep snow are expected. In the event of winter shutdown, appropriate steps must be taken to stabilize the site.

Proper operation of the separation system between product and water is necessary. Free product should not be pumped into the infiltration trench. The infiltration trench itself should not overflow or be a hazard in any way. No discharges into the St. Joe River will be allowed from the system.

Any system failure or shutdown lasting more than two days shall be reported to the Department within two days of detection of such failure. Any discharge of free product into the environment by the system shall be reported to the Department within 24 hours of detection of such discharge.

Absorbant booms shall be installed to contain petroleum discharge from seeps along the river. These booms shall be in operation from June 1 to October 31, during active remediation.

#### F. REPORTS

Recovery completion and post-recovery monitoring will be conducted according to the provisions of the Consent Order.

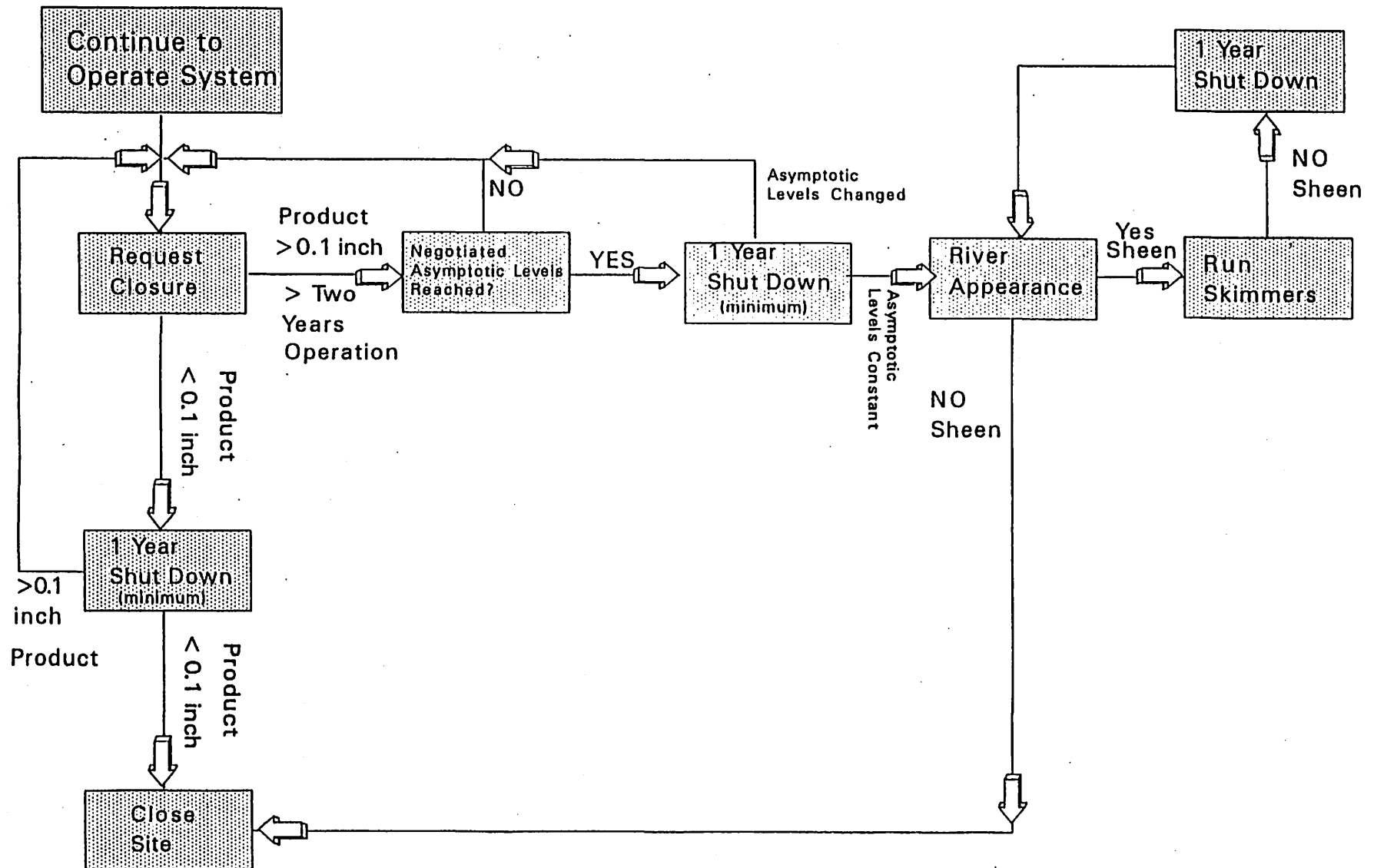
The following reports and information, as outlined in this Remediation Plan, shall be submitted to the Department:

1. As provided in paragraph 6.B of the Consent Order, within thirty (30) days after the effective date of the Consent Order, final plans and specifications regarding the design of the system, including a project implementation schedule;
2. As provided in paragraph C, within three (3) weeks after receiving laboratory results, an analysis of the excavated soils not used to backfill the recovery trench;
3. As provided in paragraph D, within three (3) weeks of receipt by Potlatch and CMC, the results of quarterly

product and water level monitoring taken during the operation of the system;

4. As provided in paragraph D, three (3) weeks after the first three months of the operation of the system, a report setting forth a capture zone analysis and an analysis of the effectiveness of the system;
5. Product thickness sampling results taken after the shutdown of the system to determine if recovery is complete; and
6. On an annual basis, beginning one year after the effective date of the Consent Order, an annual report describing (i) the total amount of product recovered in that year and the destination of the product recovered; (ii) an analysis of the effectiveness of the system; and (iii) a schedule for the next year's product and water level monitoring. The Department shall review the annual reports in terms of the effectiveness and continued practicality of the use of the recovery system, and in order to evaluate Potlatch and CMC's compliance with the Consent Order. The Department shall also approve or require a modification of the water level and product monitoring schedules contained in the annual reports. Based upon the reports, any party to the Consent Order may request, in writing, a modification of this Remediation Plan.

Shut down Criteria Flow Chart  
Avery Landing Site March 25, 1994





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DEQ-Coeur d'Alene  
Regional Office

**Potlatch**

Potlatch Corporation  
Resource Management Division  
Idaho Region

St. Joe Area Woodlands  
P.O. Box 386  
St. Maries, Idaho 83861-0386  
Telephone (208) 245-4146  
Fax (208) 245-6421

December 21, 2001

State of Idaho  
Division of Environmental Quality  
2110 Ironwood Parkway  
Coeur d'Alene ID 83814-2648

Attn: Kreg Beck

Re: Avery Landing Remediation and Project Schedule

Dear Kreg:

The Avery landing monthly well monitoring from November 2000 through October of 2001 is attached for your review.

We purchased a "new" oil/water interface meter manufactured by HERON INSTRUMENTS to accurately measure product depth in the wells for the twelve month monitoring period.

The product thickness measured in older wells (EW's, HC's and MW's) over the past twelve month period shows "less" product thickness than previously measured in the wells.

During the monthly well monitoring the St. Joe River water surface was observed for any visible oil sheen and none was observed.

In the spring of 2001 sixty cottonwood, thirty willow and maple, sixty Ponderosa Pine, and twenty five Spruce trees were planted on the remediation site.

On August 9<sup>th</sup> and 10<sup>th</sup>, 2001 the St. Joe Oil Company removed 1,290 gallons of stored oil product to the Potlatch Corporation, St. Maries Complex boilers for disposal. This stored oil was extracted by our original remediation system that operated from 1994 through 2000. We filed a "Notification of Regulated Waste Activity" with the environmental Protection Agency to comply with section 3010 of the Resource Conservation and Recovery Act (RCRA). Our EPA I.D. number is IDR000200105.

# Potlatch

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## Avery Landing Remediation and Project Schedule

Page 2

The Avery Landing Remediation System has been installed for over a year and is functioning as designed. The remediation has effectively stopped the oil product from entering the St. Joe River.

For the next five years (2002-2006) we propose to monitor the existing wells once per year during the month of August or September. In the event measurable oil product of 0.05' or greater is observed in the six 36 inch collection wells, we will use absorption pads to collect and remove the oil from the wells. We will also monitor the St. Joe River for any sign of oil sheen on the water surface and ensure that vegetation is established in accordance with our corrective action plan.

Kreg, if you have any questions feel free to call me at my St. Maries office.

Sincerely,

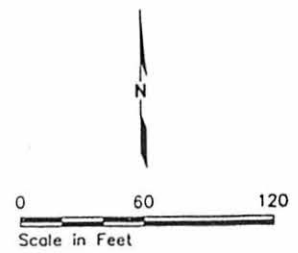
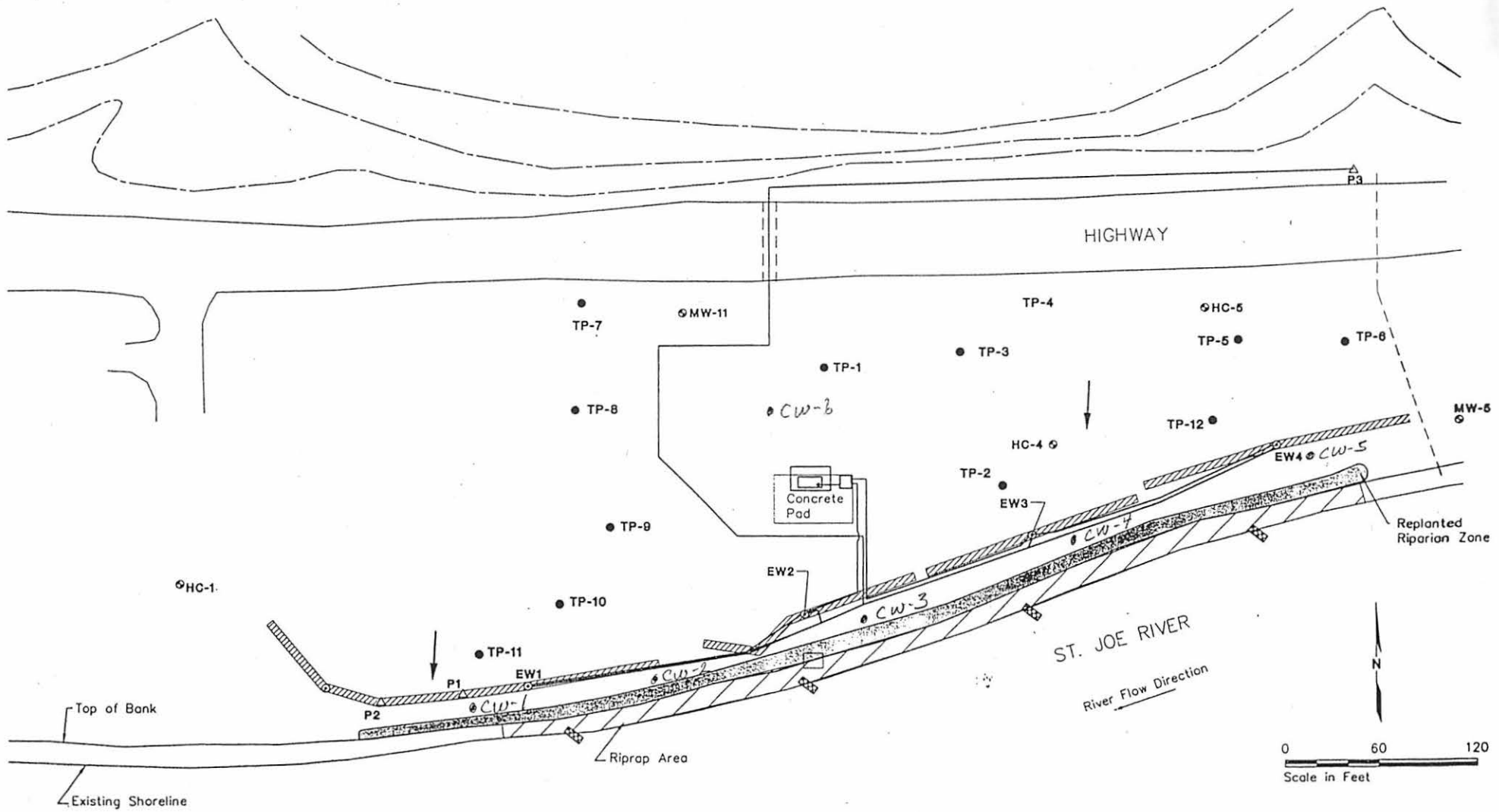


Norm Linton  
Area Manager

NL: br

CC: Greg Weigal - U.S., EPA, Boise  
Chip Corsi - IDFG, CDA  
Mike McAllister  
John Emery  
Greg Rapp

# Avery Landing Remediation Site



## Exploration Location and Number

- MW-4 Monitoring Well
- EW1 Extraction Well
- △ P1 Piezometer

- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench
- ▨ Area of Riparian Zone to be Replanted

- TP-1 Test Pit/Monitoring Well Location and Number
- ▨ Riprap Barb Location

## Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
CW-1	11/08/00	-	14.51	-	To water - no oil
	12/04/00	-	13.92	-	To water - sheen
	01/16/01	-	13.82	-	Depth to water light sheen
	02/15/01	-	13.46	-	To water - light sheen
	03/16/01	-	13.85	-	To water - light sheen visible
	04/18/01	-	13.70	-	To water - sheen
	05/15/01	-	10.58	-	To water - light sheen visible
	06/20/01	-	13.21	-	To water - light sheen visible
	07/24/01	-	14.12	-	To water - light sheen visible
	08/21/01	-	14.43	-	To water - light sheen present
	09/28/01	-	14.69	-	To water - light sheen
	10/31/01	-	13.75	-	To water - light sheen (15.7 to bottom)
CW-2	11/08/00	-	15.31	-	To water - oil not measureable - sheen
	12/04/00	-	14.74	-	To water - sheen
	01/16/01	-	14.62	-	To water - light sheen
	02/15/01	-	14.30	-	To water - light sheen
	03/16/01	-	14.68	-	To water - light sheen
	04/18/01	-	14.45	-	
	05/15/01	-	11.41	-	To water - light sheen visible
	06/20/01	-	14.01	-	To water - light sheen
	07/24/01	-	14.95	-	To water - light sheen visible
	08/21/01	-	15.23	-	To water - light sheen/rust
	09/28/01	-	15.41	-	To water - light sheen
	10/31/01	-	14.55	-	To water - light sheen (15.85 to bottom)
CW-3	11/08/00	-	13.30	-	To water - no oil
	12/04/00	-	11.81	-	To water - very light sheen
	01/16/01	-	12.35	-	To water - light sheen
	02/15/01	-	12.10	-	To water - light sheen
	03/16/01	-	12.73	-	To water - light sheen
	04/18/01	-	12.35	-	To water - sheen
	05/15/01	-	8.80	-	To water - light sheen
	06/20/01	-	11.87	-	To water - light sheen
	07/24/01	-	12.81	-	To water - light sheen visible
	08/21/01	-	13.18	-	To water - light sheen visible
	09/28/01	-	13.38	-	To water - light sheen, some rust
	10/31/01	-	12.40	-	To water - light sheen (16.1 to bottom)
CW-4	11/08/00	-	12.51	-	To water - sheen visible
	12/04/00	-	11.20	-	To water - sheen
	01/16/01	-	11.56	-	To water - light sheen
	02/15/01	-	11.52	-	To water - light sheen
	03/16/01	-	11.68	-	To water - very light sheen
	04/18/01	-	11.50	-	To water - sheen
	05/15/01	-	8.24	-	To water - very light sheen
	06/20/01	-	10.93	-	To water - light sheen
	07/24/01	-	11.89	-	To water - rusty sheen present
	08/21/01	-	12.40	-	To water - rusty sheen present
	09/28/01	-	12.71	-	To water - rusty sheen
	10/31/01	-	10.83	-	To water - clean (15.60 to bottom)
CW-5	11/08/00	-	12.85	-	To water - oil not measurable - sheen
	12/04/00	-	11.91	-	To water - no measurable oil - sheen
	01/16/01	-	11.81	-	To water - light sheen
	02/15/01	-	11.41	-	To water - light sheen

## Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
CW-5 (Continued)	03/16/01	-	11.83	-	To water - very light sheen
	04/18/01	-	11.18	-	To water - sheen
	05/15/01	-	8.50	-	To water - light sheen
	06/20/01	-	11.10	-	To water - very light sheen
	07/24/01	-	12.41	-	To water - light sheen
	08/21/01	-	12.83	-	To water
	09/28/01	-	13.39	-	To water - very light sheen
	10/31/01	-	11.78	-	To water - very light sheen (15.30 to bottom)
CW-6	11/08/00	-	18.21	-	To water - sheen
	12/04/00	-	17.35	-	To water - sheen
	01/16/01	-	17.33	-	To water - light sheen
	02/15/01	-	17.11	-	To water - light sheen
	03/16/01	-	17.26	-	To water - light sheen
	04/18/01	-	17.14	-	To water - sheen
	05/15/01	-	14.11	-	Visible thin layer of oil
	06/20/01	-	16.70	-	Visible thin layer of oil
	07/24/01	-	17.68	-	To water - visible thin layer of oil
	08/21/01	-	18.13	-	To water - visible thin layer of oil
	09/28/01	-	18.42	-	To water - thin layer of oil
	10/31/01	-	17.33	-	To water - thin layer of oil (19.70 to bottom)
EW-1	11/08/00	-	15.91	-	To water - sheen visible
	12/04/00	-	15.30	-	To water - light sheen
	01/16/01	-	15.39	-	To water - light sheen
	02/15/01	-	15.08	-	To water - light sheen
	03/16/01	-	15.45	-	To water
	04/18/01	-	15.45	-	To water - light sheen
	05/15/01	-	12.21	-	To water
	06/20/01	-	14.84	-	To water
	07/24/01	-	15.68	-	To water
	08/21/01	-	16.06	-	To water - light sheen
	09/28/01	-	16.34	-	To water - light sheen
	10/31/01	-	15.38	-	To water - light sheen
EW-2	11/08/00	-	15.25	-	To water - heavy sheen
	12/04/00	14.19	Can't determine	-	Can't determine oil depth - too thick
	01/16/01	14.60	Can't determine	-	To oil - very thick
	02/15/01	14.34	14.36	0.02	Oil present
	03/16/01	14.75	14.78	0.03	Oil present
	04/18/01	14.60	Can't determine	-	Couldn't clean probe
	05/15/01	11.53	11.54	0.01	Oil present - thin layer
	06/20/01	14.10	Can't determine	-	To oil
	07/24/01	14.95	15.00	0.05	To oil
	08/21/01	15.34	15.38	0.04	Oil present
	09/28/01	15.62	15.67	0.05	To oil
	10/31/01	14.62	14.65	0.03	To oil
EW-3	11/08/00	16.42	16.50	0.08	Oil present
	12/04/00	14.42	Can't determine	-	Can't determine oil depth - too thick
	01/16/01	14.80	Can't determine	-	Oil present - can't get thickness
	02/15/01	14.50	Can't determine	-	Oil present
	03/16/01	14.77	14.80	0.03	Oil present
	04/18/01	14.60	Can't determine	-	Couldn't clean probe
	05/15/01	11.38	11.42	0.04	Oil present
	06/20/01	14.13	14.17	0.04	Oil present

## Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
EW-3 (Continued)	07/24/01	15.05	15.11	0.06	Oil present
	08/21/01	15.52	15.58	0.06	Oil present
	09/28/01	15.81	15.89	0.08	To oil
	10/31/01	14.60	14.64	0.04	To oil
EW-4	11/08/00	13.75	13.77	0.02	Oil present
	12/04/00	12.64	12.65	0.01	Oil present
	01/16/01	12.74	Can't determine	-	Thick oil present
	02/15/01	12.25	Can't determine	-	To oil
	03/16/01	12.42	Can't determine	-	To oil - very thick
	04/18/01	11.35	Can't determine	-	Couldn't clean probe
	05/15/01	9.01	9.02	0.01	To oil - thin layer
	06/20/01	11.58	11.59	0.005	Oil present
	07/24/01	12.90	12.93	0.03	Oil present
	08/21/01	13.62	13.64	0.02	Oil present
	09/28/01	14.00	14.02	0.02	To oil
	10/31/01	12.55	12.57	0.02	To oil (very thick)
HC-1	11/08/00	-	-	-	Could not find
	12/04/00	-	-	-	Could not find
	01/16/01	-	-	-	Could not find
	02/15/01	-	-	-	Could not find
	03/16/01	-	12.70	-	To water - no oil
	04/18/01	-	12.50	-	To water - clean
	05/15/01	-	9.72	-	To water - some red rust
	06/20/01	-	12.10	-	Water - light red rust
	07/24/01	-	12.91	-	To water - clean
	08/21/01	-	13.27	-	To water - clean
	09/28/01	-	13.45	-	To water - light red rust present
	10/31/01	-	12.63	-	Red rust present (17.85 to bottom)
HC-4	11/08/00	13.68	14.46	0.78	Oil present
	12/04/00	12.97	Can't determine	-	Can't determine oil depth - too thick
	01/16/01	12.81	Can't determine	-	Oil present
	02/15/01	12.51	Can't determine	-	Oil present
	03/16/01	11.91	Can't determine	-	To oil
	04/18/01	12.20	Can't determine	-	Couldn't find probe
	05/15/01	10.48	Can't determine	-	Oil present
	06/20/01	12.15	12.34	0.19	Oil present
	07/24/01	13.07	13.38	0.31	Oil present
	08/21/01	13.55	14.12	0.57	Oil present
	09/28/01	13.80	14.61	0.81	Oil present
	10/31/01	12.65	13.45	0.80	Oil present (18.13 to bottom)
HC-5	11/08/00	-	18.40	-	To water - no oil
	12/04/00	-	17.63	-	To water - no measurable oil - sheen
	01/16/01	-	17.55	-	To water - no oil
	02/15/01	-	17.28	-	To water - no oil
	03/16/01	-	17.24	-	To water
	04/18/01	-	16.98	-	To water - clean
	05/15/01	-	14.25	-	To water - clean
	06/20/01	-	16.80	-	To water - clean
	07/24/01	-	17.88	-	To water - clean
	08/21/01	-	18.40	-	To water - clean
	09/28/01	-	18.72	-	To water - clean
	10/31/01	-	17.46	-	To water (23.05 to bottom)

## Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
MW-5	11/08/00	-	10.80	-	To water - no oil
	12/04/00	-	9.93	-	To water - no oil
MW-5	01/16/01	-	9.70	-	To water - no oil
(Continued)	02/15/01	-	9.35	-	To water - no oil
	03/16/01	-	10.04	-	To water
	04/18/01	-	9.28	-	Clean
	05/15/01	-	6.51	-	Clean
	06/20/01	-	9.20	-	Clean
	07/24/01	-	10.40	-	Clean
	08/21/01	-	10.97	-	Clean water
	09/28/01	-	11.28	-	Clean water
	10/31/01	-	9.92	-	To water (12.83 to bottom)
MW-11	11/08/00	-	-	-	Not tested
	12/04/00	18.40	-	-	Oil to thick - do not test
	01/16/01	17.90	-	-	To oil (thick) - not measurable
	02/15/01	-	-	-	Can't find - deep snow
	03/16/01	-	-	-	Not tested
	04/18/01	15.75	-	-	Couldn't clean probe
	05/15/01	-	-	-	Not tested
	06/20/01	-	-	-	Not tested
	07/24/01	-	-	-	Not tested
	08/21/01	-	-	-	Not tested
	09/28/01	-	-	-	Not tested
	10/31/01	-	-	-	Not tested
TP-1, 2"	11/08/00	-	20.02	-	To water - no oil
	12/04/00	-	19.10	-	To water - sheen
	01/16/01	-	19.16	-	To water - no oil
	02/15/01	-	18.88	-	To water - no oil
	03/16/01	-	19.08	-	To water - light sheen
	04/18/01	-	18.85	-	To water - light sheen
	05/15/01	15.785	15.79	0.005	To thin layer of oil
	06/20/01	-	18.53	-	To water - light sheen
	07/24/01	-	19.46	-	To water - light sheen
	08/21/01	-	19.95	-	To water - light sheen
	09/28/01	-	20.22	-	To water - sheen present
	10/31/01	-	19.08	-	Trace of oil (22.41 to bottom)
TP-1, 4"	11/08/00	-	19.75	-	To water - sheen
	12/04/00	18.83	18.84	0.01	Thin layer of oil
	01/16/01	-	18.92	-	To water - no oil
	02/15/01	-	18.63	-	To water - light sheen
	03/16/01	-	18.82	-	To water - heavy sheen
	04/18/01	-	18.60	-	To water - heavy sheen
	05/15/01	-	15.63	-	Heavy sheen
	06/20/01	-	18.28	-	To water - light sheen
	07/24/01	-	19.20	-	To water - heavy sheen
	08/21/01	-	19.69	-	To water - heavy sheen
	09/28/01	-	19.96	-	To water - heavy sheen
	10/31/01	-	18.85	-	Trace of oil - micro worms (16.98 to bottom)
TP-2	11/08/00	-	14.95	-	To water - no oil
	12/04/00	-	15.37	-	To bottom - no oil - dry well
	01/16/01	-	15.45	-	Dry well

## Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
TP-2 (Continued)	02/15/01	-	15.35	-	Dry well
	03/16/01	-	14.61	-	to water
	04/18/01	15.21	Can't determine	-	Couldn't clean probe
	05/15/01	-	12.19	-	To water
	06/20/01	14.85	14.86	0.01	Oil present
	07/24/01	-	15.40	-	Well bottom - sludge no oil
	08/21/01	-	15.40	-	Well bottom - dry trace of oil
	09/28/01	-	15.90	-	well bottom - dry light trace of oil
	10/31/01	-	14.50	-	To water (15.40 to bottom)
TP-3	11/08/00	-	16.45	-	Dry well
	12/04/00	-	16.05	-	Dry well
	01/16/01	-	16.10	-	Dry well
	02/15/01	-	16.12	-	Dry well
	03/16/01	-	15.01	-	To water - light sheen
	04/18/01	-	15.80	-	To water - light sheen
	05/15/01	-	13.28	-	To water - very light sheen
	06/20/01	-	15.58	-	To water - oil globs on probe
	07/24/01	-	16.10	-	Well bottom - dry well/clean
	08/21/01	-	16.10	-	Well bottom - dry trace of oil
	09/28/01	-	16.10	-	Well bottom - dry trace of oil
	10/31/01	-	15.20	-	Trace of oil - micro worms present (16.10 to bottom)
TP-5	11/08/00	-	17.92	-	To water - no oil
	12/04/00	-	16.27	-	To water - no measurable oil - sheen
	01/16/01	-	16.11	-	To water - light sheen
	02/15/01	-	15.76	-	To water - light sheen
	03/16/01	-	15.12	-	To water
	04/18/01	-	15.55	-	Clean
	05/15/01	-	12.73	-	Clean
	06/20/01	-	15.21	-	Clean
	07/24/01	-	16.35	-	Clean
	08/21/01	-	16.86	-	To water - micro worms present
	09/28/01	-	16.98	-	To water - trace of oil
	10/31/01	-	15.63	-	To water (18.10 to bottom)
TP-6	11/08/00	-	15.00	-	Dry well
	12/04/00	-	14.76	-	To water - no oil
	01/16/01	-	14.62	-	Dry well
	02/15/01	-	14.42	-	To water - no oil
	03/16/01	-	14.13	-	To water
	04/18/01	-	14.14	-	Clean
	05/15/01	-	11.62	-	Clean
	06/20/01	-	13.95	-	Clean
	07/24/01	-	14.79	-	Specks of oil
	08/21/01	-	14.95	-	Well bottom - dry trace of oil
	09/28/01	-	14.98	-	Well bottom - oily mud
	10/31/01	-	14.38	-	To water (14.98 to bottom)
TP-7	11/08/00	-	17.30	-	Dry well
	12/04/00	-	17.05	-	Bottom - dry well
	01/16/01	-	17.00	-	Dry well
	02/15/01	-	17.10	-	Dry well
	03/16/01	-	14.73	-	To water - red rust in water
	04/18/01	-	15.38	-	Clean
	05/15/01	-	14.36	-	To water - red rust color



## Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
	06/20/01	-	16.96	-	Dry well - wet red rust
	07/24/01	-	16.98	-	Well bottom - dry
	08/21/01	-	16.98	-	Well bottom - dry
	09/28/01	-	16.98	-	Well bottom - dry
	10/31/01	-	16.81	-	To water - micro worms (16.98 to bottom)
TP-8	11/08/00	-	17.40	-	Dry well
	12/04/00	-	16.76	-	Bottom - dry well
	01/16/01	-	16.81	-	Dry well
	02/15/01	-	16.80	-	Dry well
	03/16/01	-	16.42	-	To water - oil skim present
	04/18/01	-	16.45	-	To water - skim of oil
	05/15/01	-	14.00	-	To water - skim of oil
	06/20/01	-	16.39	-	To water - skim of oil
	07/24/01	-	16.82	-	Well bottom - dry
	08/21/01	-	16.82	-	Well bottom - dry
	09/28/01	-	16.82	-	Well bottom - dry
	10/31/01	-	16.82	-	Dry - clean
TP-9	11/08/00	-	18.41	-	Water - no oil
	12/04/00	-	17.80	-	To water - no oil
	01/16/01	-	17.67	-	To water - no oil
	02/15/01	-	17.38	-	To water - no oil
	03/16/01	17.35	17.42	0.04	Oil present - very thin oil
	04/18/01	-	17.34	-	Oil present - thin oil
	05/15/01	14.58	14.585	0.005	To thin layer of oil - micro worms present
	06/20/01	17.05	17.055	0.005	Thin layer of oil
	07/24/01	17.95	17.98	0.03	Oil present
	08/21/01	18.35	18.39	0.04	Oil present
	09/28/01	18.61	18.64	0.03	Oil present - micro worms present
	10/31/01	17.66	17.67	0.01	Oil present (19.25 to bottom)
TP-10	11/08/00	-	18.00	-	Dry well
	12/04/00	-	17.48	-	To water - no oil
	01/16/01	-	17.24	-	To water - no oil
	02/15/01	-	16.96	-	To water - no oil
	03/16/01	-	17.03	-	To water
	04/18/01	-	17.10	-	Clean
	05/15/01	-	14.20	-	To water
	06/20/01	-	16.64	-	To water
	07/24/01	-	17.45	-	To water - micro white worms
	08/21/01	-	17.50	-	Well bottom - light sludge - oily
	09/28/01	-	17.50	-	Well bottom - dry
	10/31/01	-	16.84	-	To water - micro worms (17.50 to bottom)
TP-11	11/08/00	-	18.00	-	Dry well
	12/04/00	-	17.46	-	To water - no oil
	01/16/01	-	17.23	-	To water - no oil
	02/15/01	-	16.97	-	To water - no oil
	03/16/01	-	17.11	-	To water - very light sheen
	04/18/01	-	17.10	-	To water - very light sheen
	05/15/01	-	14.18	-	To water - light sheen
	06/20/01	-	16.70	-	To water
	07/24/01	-	17.43	-	To water - micro white worms present - no oil
	08/21/01	-	17.58	-	To water - micro white worms present
	09/28/01	-	17.80	-	To water - light sheen present

## Avery Well Monitoring

Monitoring Location	Date	Dept to Oil Product	Dept to Water	Product Thickness	Comments
	10/31/01	-	17.70	-	To water - micro worms (17.90 to bottom)
TP-12	11/08/00	-	14.76	-	To water - no oil
	12/04/00	-	15.01	-	To water - no measureable oil - sheen
	01/16/01	-	14.83	-	To water - no oil
	02/15/01	-	14.72	-	To water - no oil
TP-12 (Continued)	03/16/01	-	13.82	-	To water
	04/18/01	-	14.70	-	To water - light sheen
	05/15/01	-	11.60	-	Light sheen
	06/20/01	-	14.26	-	Very light sheen
	07/24/01	-	15.25	-	Well bottom - sandy sludge with oil
	08/21/01	-	15.25	-	Well bottom - sludge with oil
	09/28/01	-	15.28	-	Well bottom - oil sludge
	10/31/01	-	14.53	-	To water - trace of oil (15.30 to bottom)



March 11, 2011

Earl Liverman  
U.S. EPA Region 10  
1910 Northwest Boulevard, Suite 208  
Coeur d'Alene, ID 83814

**Re: EPA's Draft Environmental Evaluation/Cost Analysis (EE/CA) for Avery Landing Site in Shoshone County, Idaho**

Dear Mr. Liverman:

Potlatch Land & Lumber, LLC (Potlatch) appreciates the opportunity to comment on the subject EE/CA. As a current owner of a portion of the Avery Landing Site, Potlatch has a keen interest in the EE/CA and any final remedy that is selected by EPA at the Site. As you are aware, Potlatch has already expended significant resources in attempting to address the environmental issues at the Site. Potlatch has acted responsibly and in close consultation with the State of Idaho since environmental issues were first discovered at the Site in the 1980s. Even though Potlatch never caused or contributed to the historical environmental conditions at the Site, we have been the only entity that has attempted to address these issues. We fully expect to continue to contribute our fair share to the costs of any cleanup at the Site attributable to petroleum releases on Potlatch's property and hope that we can work with EPA to achieve an agreeable settlement. Accordingly, we are submitting the following technical comments seeking clarification of certain matters relevant to the Site cleanup.

**I. Technical Comments**

Potlatch appreciates the opportunity that was provided by EPA to discuss technical issues related to the subject EE/CA with our consultant Geo-Engineers. Based on those discussions, we offer the following technical comments.

A. Multiple terms are interchangeably used in the EE/CA to characterize the presence and delineation of the extent of petroleum hydrocarbons and it is not clear what the applicable screening levels and cleanup criteria are for petroleum hydrocarbons at the Site. The only criteria specified for cleanup is a "free product" of greater than .1 inch. This standard is derived from the definition of "free product" in state water quality rules at IDAPA 58.01.02. It is not clear how this standard will be applied and implemented during site cleanup. Also, state rules only require the removal of free product to the "maximum extent practicable". See IDAPA 58.01.02.852.04.a. There is no discussion on what the maximum extent practicable is or how the

proposed remedy achieves this ARAR. Clarification is requested on what screening levels or cleanup criteria for petroleum hydrocarbons will be used to delineate the extent of contamination and soil requiring remedial action. Further, clarification is requested for how the selected screening levels or cleanup criteria will be utilized during the remedial action to identify the limits of the proposed remedial excavation and for any required post-construction groundwater monitoring.

B. The EE/CA acknowledges that the concentrations of metals present in soil at the Site are likely the result of background metals concentrations for the area. However, the EE/CA identifies metals as contaminants of concern for the Site. Clarification is requested on what is the basis for identification of background metals as contaminants of concern. Further, clarification is requested on how background metals concentrations will be utilized during remedial action to identify the limits of the proposed remedial excavation and for any required post-construction groundwater monitoring.

C. The extent of remedial activities is identified to be based on the presence of petroleum hydrocarbons. However, the EE/CA also compares existing Site data to screening levels for various other supposedly non-petroleum chemicals including volatile and semi-volatile organic compounds and polychlorinated biphenyls (PCBs). Clarification is requested on how the screening levels for these alleged non-petroleum chemicals and PCBs will be utilized (i) to define the extent of contamination; (ii) to identify the limits of the remedial action; and (iii) to determine any required for post-construction groundwater monitoring.

D. Clarification is requested on the purpose and need for the pre-design polychlorinated biphenyl (PCB) investigation identified in the EE/CA cost estimate for Alternative A4 (i.e., off-site disposal). The existing Site data included in the EE/CA show that PCBs were not detected in soil, sediment, groundwater and surface water at concentrations greater than screening levels and it is not clear why additional characterization of PCBs is warranted.

E. Due to the high costs associated with disposal of the excavated materials and import of backfill to the Site, the remedial actions evaluated should include consideration of, and allowance for, reuse of the soil or components of the soil requiring treatment as part of the remedial action in addition to landfill disposition. Options for soil reuse should include screening, treatment, and reuse of the reclaimed larger soil fraction (ex. gravel) materials as backfill at the Site, use of the impacted media as a component to roadway paving, or other alternatives approved by EPA.

F. Clarification is requested on the extent of excavation that is anticipated along and within the St. Joe River as part of the selected remedial alternative. Additionally, the EE/CA

specifies the installation of a temporary dam-like structure to exclude water and facilitate the shoreline excavation. It is not clear however, if the cost for the dam-like structure is included in the remedial cost estimates.

G. The source for several of the unit rate assumptions in the cost estimates provided were not identified. Clarification is requested on the basis and assumptions for all unit rates used so that independent verification of the estimated costs can be made.

H. A schedule for the completion of remedial action planning, design and performance of remedial activities is not provided. Consideration of the schedule for preparation and performance of remedial activities may have significant influence on the project approach and cost. Clarification is requested on EPA's proposed schedule for implementation of remedial activities at the Avery Landing site.

## **II. Specific Comments and Suggested Revisions to Sections of the Draft EE/CA**

In addition to the foregoing technical comments, we have comments regarding the drafting of the subject EE/CA. As stated above, it is our hope that we can work with EPA to reach an agreeable settlement. However, despite our desire to work cooperatively with EPA there are portions of the subject EE/CA which potentially impacts our relationship. We are concerned about many aspects of the subject EE/CA and how it might affect Potlatch's share and amount of liability at the Site. Therefore we have determined that it is necessary to submit the following detailed comments.

### **A. Executive Summary**

1. Paragraph 1. The summary mentions that there are three owners of the Site. We note that there are actually four owners - the bed and banks of the St. Joe River are owned by the State of Idaho.

2. Paragraph 2. There is no evidence to suggest that "hazardous substances" (aside from naturally occurring metals) are discharging to the St. Joe River from the Site. We suggest that this paragraph should be amended accordingly.

B. Chapter 2. Site Characterization

1. Section 2.1.2.

a. First Paragraph. Based on historical records there were many more fuel tanks on the Site than the 500,000 gallon AST. These tanks and associated piping were located on Section 15 of the Site which is not owned and never was owned by Potlatch. Also, as stated in our technical comments, we don't understand the emphasis on trace amounts of PCBs detected in a very small percentage of samples at the Site, when these trace amounts are all below any conservative health based levels.

b. Second Paragraph. The Figures 2-4 and 2-5 only highlight certain Milwaukee Railway facilities. The railroad site schematic is a more accurate depiction of the Site and shows that all of the fuel tanks at the Site were located on Section 15 and were not located on Potlatch's property. This is significant because the only contaminant at the Site is petroleum. Also the AST referenced in this paragraph should be a 500,000 gallon tank not a 50,000 gallon tank.

c. Third Paragraph. Potlatch purchased the property from the Chicago Milwaukee Railroad in 1980 in a sale that was approved by the Bankruptcy Court. Potlatch did not purchase the property from CMC Real Estate Company as suggested. We fail to see the relevance of the statement that "there are reports that Potlatch attempted to purchase the entire site." This is not relevant to the EE/CA and should be deleted. Further the statement that "many of the Milwaukee Railroad facilities . . . were located on Potlatch's property" is misleading and therefore should be deleted. A simple reference to the railroad site schematic can provide readers with an accurate picture of the various facilities and their locations. To the extent such a narrative description of historical railroad facilities is necessary to the EE/CA, it should state that all of the fuel storage and refueling facilities were located on property not owned by Potlatch.

d. Fifth Paragraph. The statement that Potlatch reinjected untreated ground water from the 1990 pump and treat system after processing through an oil-water separation is misleading. Such a system was approved by IDEQ with knowledge by EPA. There may have been one instance when reinjection of untreated ground water accidentally took place. We believe that this statement does not assist in the analysis and should be deleted from the EE/CA.

2. Section 2.2.3. There is no evidence that reinjection of ground water north of the road by Potlatch pursuant to IDEQ requirements affected the extent and distribution of contaminants. This sentence should be deleted.

3. Section 2.2.5. The first sentence should be amended to note that Potlatch, not IDEQ, discovered and reported the discharges in 2005. Potlatch strongly disagrees with the characterizations in this section related to boom maintenance. It is also not clear why such a discussion is relevant to this EE/CA particularly since the use of booms is never considered in the remainder of the EE/CA. Accordingly, we request that this discussion be deleted.

4. Section 2.2.6 Third Paragraph. Potlatch disagrees that "CERCLA hazardous substances" such as PAHs and metals were detected at the Site. First, any PAHs detected at the site are not CERCLA hazardous substances but rather are clearly from petroleum or "any fraction thereof" as specified at 42 U.S.C. § 9601(14) and implementing EPA Guidance. This fact is acknowledged later on in the EE/CA. *See* EE/CA at p. 2-21. Second, as also acknowledged in the EE/CA, the metals detected in site soils at the Site are clearly from native soils and consistent with EPA and state rules, should not be treated as contaminants or COC's at the Site. *See* EE/CA at p. 2-16. Third, as discussed in our Technical Comments, the emphasis on PCBs is not appropriate as all samples have been below the most conservative federal and state regulatory criteria. Further, it would be appropriate in this Section to specify what the cleanup levels are for any alleged hazardous substances at the Site and whether such levels were exceeded based on data collected. Finally, we don't understand why the former domestic well is discussed in this section in view of the fact it is not being used, and will not be used in the future if appropriate institutional controls are put in place. We believe the discussion of the well should be deleted. If the EE/CA requires reference to the domestic well on site in this section (despite the fact that it is not being used, and will not be used in the future whether or not institutional controls are put in place) then it should be made clear that all sample results ever taken from the domestic well indicated compliance with all state and federal drinking water criteria.

5. Section 2.4.1 First Paragraph. The statement that "other contaminants are likely related to other historical activities" does not appear supportable. Almost all of the "other contaminants" or "COCs" are metals which are naturally occurring in native soils. *See* EE/CA at p. 2-16.

6. Section 2.4.3. The reference to "potential future residents" at the Site would not be necessary if institutional controls were considered in the EE/CA. Likewise the alleged threat of some hypothetical potential future residents drinking water from the closed domestic well on site could easily be addressed by the appropriate use of institutional controls. *See also* General Comment D, *infra*.

7. Section 2.6.2.1. Residents. It is not appropriate to consider "full time residents" as appropriate receptors. Institutional controls could address this issue. Similarly assuming that there will be ingestion of impacted ground water and dermal contact is not appropriate when institutional controls could address this. Finally the risk of inhalation of

volatile chemicals in “homes” could also be addressed through institutional controls. *See also* General Comment D, *infra*.

Regarding the exposure pathway in the St. Joe River, the potential for future domestic water intakes in the area could have been addressed by reliance upon institutional controls. Further, the statement that residents “may ingest contaminated fish” is inappropriate and inflammatory and should be deleted as there is no evidence that any fish are contaminated and this portion of the St. Joe River is catch-and-release only. Such a statement also is contradicted in a later part of the EE/CA in which it is concluded that the level of biological impact, if any, is low. *See* EE/CA at p. 2-19.

8. Section 2.6.2.2. As we stated above, reliance on unrestricted residential use for determining IDEQ initial default target levels for Site soil is inappropriate. We also note that IDEQ rules implementing the default target levels at IDAPA 58.01.24, “Standards and Procedures for Application of Risk Based Corrective Action at Petroleum Release Sites” specifically acknowledge the use of institutional controls and site specific risk assessment which we believe would lead to different target levels for the Site. *See also* General comment D, *infra*.

9. Section 2.6.4. It would be more accurate to state that the “only” as opposed to the “primary” COC for the site is petroleum. Petroleum is not a CERCLA hazardous substance. We do not think there is any supportable basis to suggest that the PAHs or VOCs present at the site above screening levels are anything but petroleum products and therefore should not be considered hazardous substances under CERCLA.

C. Chapter 3. Identification of Removal Action Objectives.

1. Section 3.2.2. This section notes that waste streams must be disposed of in accordance with CERCLA’s off-site rule. Since the waste streams are non-CERCLA wastes at the Site, further explanation should be provided as to why CERCLA’s off-site rule must be followed.

III. General Comments

A. Potlatch is concerned that the tone and approach of the draft EE/CA is that of an advocacy document focused on justifying the application of CERCLA and the maximum assessment of liability against Potlatch under CERCLA. We believe that this tone and approach detracts from the EE/CA fulfilling its objectives.

B. The draft EE/CA appears to be laying the groundwork for imposing significant liability on Potlatch by (i) attempting to characterize Potlatch as a party that has disregarded the environmental issues at the Site and not exercised due care with respect to the risks at the Site,



and (ii) suggesting that a good portion of the contamination at the Site is found on Potlatch's property. Potlatch believes such characterizations in the draft EE/CA do not assist in the analysis of the risks at the Site and proper remediation, and should be deleted. Potlatch notes that it is the only entity that has ever stepped up and taken responsibility to address the environmental issues at the Site (with the concurrence of state authorities and knowledge of the EPA) despite the fact that Potlatch never caused any of the Site's environmental problems. Moreover, it is clear from the data presented in the EE/CA that most of the contamination on Potlatch's property has likely migrated onto the property from properties to the north and east of Potlatch's property due to the well documented movement of ground water and the location of petroleum storage and fueling tanks on other portions of the Site. *See also* Specific Comments B.1 and B.3, *supra*.

C. The data presented in the EE/CA shows pretty clearly that the only real risk at the Site is that petroleum products (which are not CERCLA hazardous substances) are seeping into the St. Joe River in contravention of the Clean Water Act. The application of CERCLA to this Site, however, substantially increases disposal costs and potentially expands the scope of Potlatch's liability at the site. For example, the EE/CA concludes that waste disposal must comply with CERCLA's off-site disposal rule. Since the waste streams at the Site are non-CERCLA wastes, it is not clear why CERCLA's off-site rule would apply. It would have been helpful for the EE/CA to compare the costs of disposal of the waste stream if the CERCLA off-site rule did not apply. This is a significant issue because a large percentage of the \$8 plus million recommended cleanup alternative involves the hauling of large volumes of impacted soils and other materials for long distances to ensure compliance with CERCLA's off-site rule. We believe that alternative disposal scenarios should be considered which could substantially reduce cleanup costs. *See also*, Technical Comment E, *supra*.

D. Related to General Comments A, B and C, EPA has proposed clean up the Avery Landing Site soils and groundwater to achieve a future residential use scenario. Potlatch does not believe it is reasonable to treat an isolated site that was operated as an industrial site for most of the 20th century and which is at least a mile from any full time residential structures as a likely future residential site. Had commercial and industrial cleanup standards been applied instead, the EE/CA would have concluded that any de minimus hazardous substances found at the Site are either natural background concentrations found in native soils in the area (for metals) or otherwise do not pose any risks at the Site and are therefore not COCs. Potlatch is disappointed that the EE/CA did not consider the application of institutional controls at the Site as a mechanism to ensure that future residences and ground water extraction does not occur. Institutional controls are a well recognized mechanism under Idaho and federal law to manage residual risks at a site. Had commercial and industrial cleanup standards been applied and an institutional control approach been utilized, Potlatch believes it is likely that EPA would have properly concluded that this is not a CERCLA site, thereby potentially resulting in substantially reduced cleanup costs at the Site.

E. As stated in the Technical Comments, it is clear from the EE/CA that the real driver for site cleanup is diesel fuel and Bunker C fuel (DRO/ heavy oils) and associated PAHs. However no clear cleanup levels are suggested for these constituents and therefore it is difficult to assess what the actual costs of the proposed cleanup will be or when the cleanup will be complete. The draft EE/CA does suggest a so called "LNAPL" or "free product" cleanup standard of .1 inch of petroleum on the water surface or the water table for ground water. This standard is derived from Idaho law, however the free product standard is modified under Idaho law to only require clean up to this standard to the "maximum extent practicable." Potlatch would suggest that a cleanup in which there is no documented or anticipated impact to human health or the environment that will likely cost in excess of \$8 million far exceeds a "practicable" clean up.

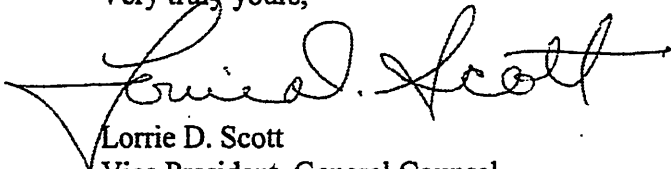
F. We understand EPA's desire to address the minor seeping of petroleum into the St. Joe River. However, the draft EE/CA does not present any data or information that such minor seeping is causing any negative ecological or human health impacts. This is a significant issue for Potlatch, because in the end, it is on the basis of this minor seepage that the EE/CA recommends a removal action that is estimated to cost in excess of \$8 million.

G. Potlatch also believes that other remedial alternatives that meet the RAO's should have been considered. A cut-off wall alternative was not evaluated and should have been included in the EE/CA to ensure that a representative range of effective alternatives were considered. Installation of a cut-off wall, LNAPL extraction, hot spot/source removal (e.g. free product removal, removal of source materials on the shoreline), and institutional controls can be used to remediate the Site at a lower cost. This alternative was considered by Potlatch in its draft EE/CA Report (Golder 2010a), and apparently rejected by the EPA in the current draft EE/CA so we expect that the EPA will be reluctant to amend the EE/CA to consider the alternative. However, at the very least, we believe the EPA should consider alternative disposal scenarios on and off-site which would substantially reduce the costs of the cleanup. *See also*, Technical Comment E, *supra* on soil reuse options.

Earl Liverman  
March 11, 2011  
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Thank you again for considering these comments. We look forward to working with EPA to implement a cost effective and equitable cleanup at the site.

Very truly yours,

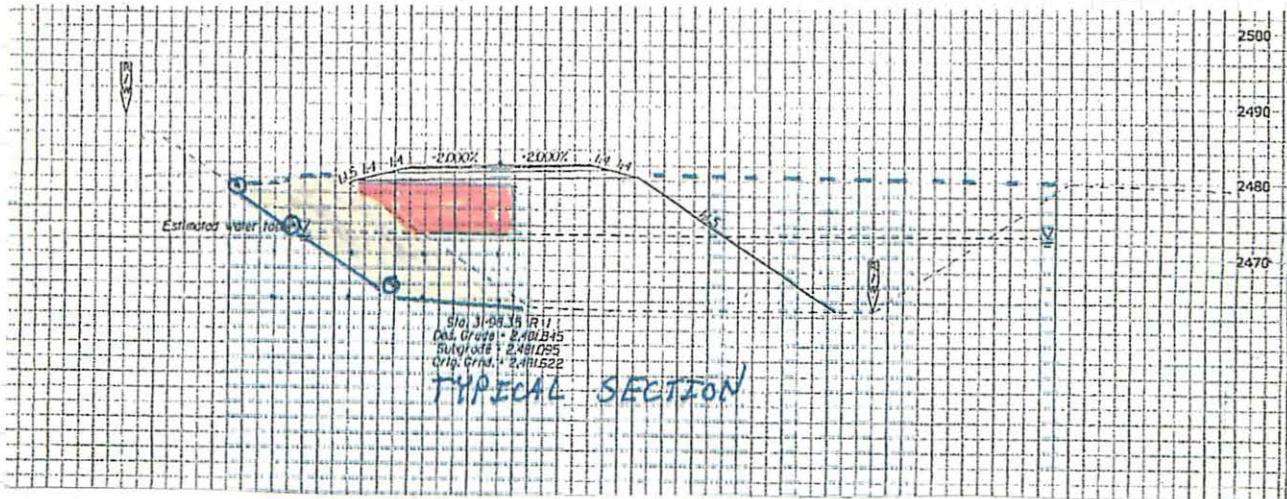


Lorrie D. Scott  
Vice President, General Counsel  
& Corporate Secretary

Project Name AVERY LANDINGProject No. ID PFH 50 (9)Subject POTLATCH PERF PIPE (FPRS) ON FHWA PROPERTYCompleted By: WHWDate: 7-30-12

Checked By: \_\_\_\_\_

Date: \_\_\_\_\_



STATION 32+46 TO 34+76

ADDITIONAL EXC / CONTAMINATED  
SUBTITLE D SOIL

$$\text{END AREA} = 222 \frac{\text{ft}^2}{\text{ft}} \times 230 \text{ ft} \div 27 \frac{\text{cy}}{\text{ft}^3} = 1892 \text{ cy} \times 1.8 \frac{\text{t}}{\text{cy}} = 3407 \text{ t}$$

$$\therefore 3407 \text{ t} @ \$55 \frac{\text{t}}{\text{t}} = \$189,085$$

EXCAVATION / CONTAMINATED  
& NOT REUSEABLE

$$\text{END AREA} = 106 \frac{\text{ft}^2}{\text{ft}} \times 230 \text{ ft} \div 27 = 907 \text{ cy} \times 1.8 \frac{\text{t}}{\text{cy}} = 1632 \text{ t}$$

$$\therefore 1632 \text{ t} @ 45 \frac{\text{t}}{\text{t}} (\$55 - \$10) = \$74,256$$

SHOT ROCK / UNCLASSIFIED TO REPLACE

$$\text{ADD. EXC ONLY } 1892 \text{ cy} = 3407 \text{ t} @ \$29 \frac{\text{t}}{\text{t}} = \$100,949$$

EPA / EQ COMMON COSTS

$$10 \text{ DAYS} @ \$11,000 / \text{DAY} = \$110,000$$

$$\text{TOTAL COST} = \$474,293$$